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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., July 7th, 1921. No. 27

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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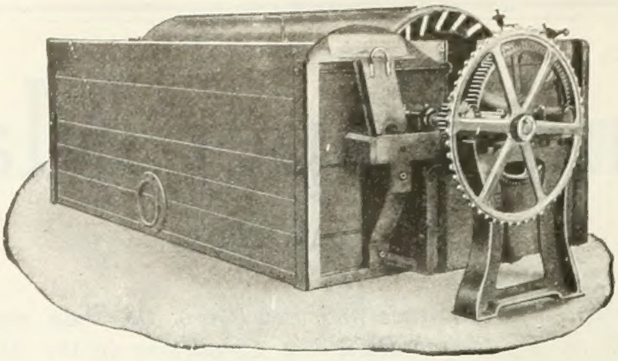

One Wood's Machine will thicken 30 tons of Chemical Pulp in 24 hours

The Wood's Machine, used as pulp thickener, saveall, pulp washer or water filter, represents a wise investment for pulp and paper mills.

Notable advantages of the Wood's Machine are: Great capacity, low wire costs, negligible repair and labor costs, and small amount of power required.

One machine in twenty-four hours will thicken thirty tons of chemical pulp from 1 part stock in 500 parts water to 1 part stock in 50 parts water or twenty-five tons from 1 part stock in 500 parts water to 1 part stock in 30 parts water.

Wire life on many of these machines has been more than one year of continuous running, making wire cost less than one-half cent per ton. Many have been in operation more than one year without repair or labor costs.

The Wood's Machine is highly recommended for use in connection with the Rogers Wet Machine, which operates at greatest capacity with stock at a consistency of 200 to 1. One large size machine will thicken the usual thin stock (500 to 1) from the screens to a constant and unvarying consistency best adapted to the requirements, and of sufficient quantity for two Rogers Wet Machines.

In this connection, they also wash the pulp free from acid or caustic, which is an important feature.

Vat is constructed of 3'' white pine, securely strapped and bolted. All material and workmanship are fully guaranteed.

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EDITORIAL

THE UNITED STATES TARIFF.

No one who reads the terms of the Tariff Bill introduced last week in the United States Congress will accuse Mr. Fordney and his confreres of being impartial to the interests of the American paper maker. The bill not only provides for a high duty on the kinds of paper and paper products accustomed to the protecting shade of the tariff wall, but carries a kick for any country that may presume to protect its own industries by encouraging the conversion at home of its own resources. It can hardly be called a coincidence that the items which are nominally on the free list, *if* there is no export restriction on such products on the wood used in making them, and the materials on which the American newspaper publisher depends for his paper supply. It is significant too, that standard news and wood pulp constituted 92.7 per cent of Canada's total export of paper and pulp in May, and the States took 78.9 per cent of these exports. These items are on the free list, *provided* that the country from which they come, or any subdivision of it, does not impose any tax or restriction on the export of such product or the raw material of which it is made. The bill even provides that, in the case of pulp, if there isn't enough of this to be punished, the penalty passes on to newsprint. The penalty is really a joke, when one consider that this is to take the form of a duty of 10 per cent *ad valorem* on newsprint and wood pulp. This duty, say on 5 cent paper, would add ½ cent per pound. The American publishers will, no doubt, cheerfully pay this extra price for the privilege of buying good Scandinavian or German paper — and, of course, the same increase on American made paper so as to help their countrymen pay for their(joint)folly in depleting their own forests.

The blight even extends to other printing paper. This is saddled with a duty of 1 cent per pound plus 10 per cent *ad valorem* any way, but if imported from a country that values its pulpwood enough to place restriction on its use, there is an additional 10 per cent put on.

Other papers do not seem to call for any apparent discrimination as regards the country of their origin. Many of these are not made now in Canada in sufficient amounts to disturb paper makers in the Dominion with respect to the market in the States. Also, since the newspaper is not vitally interested, there is not likely to be much audible objection to the duties involved. The duties on items of some interest here are, briefly:

Boards, 10 per cent *ad valorem.*

Coated paper, 5 cents per pound.

Tissues, weighing less than 8 pounds per ream, 6 cents and 15 per cent; above 8 pounds, 5 cents and 15 per cent.

Waxed paper, grease proof, etc., 2 cents and 15 per cent.

Writings, Bristols, etc., 3 cents and 15 per cent.

Plain envelopes, 5 per cent.

Plain hanging, 10 per cent.

Blotting, 2 cents and 10 per cent.

Wrapping, 23 per cent.

Papers, not specially provided for, 23 per cent.

Perhaps the high duty on Wrapping Paper is an indirect way of protecting the newsprint manufacturers; many of whom have changed news machines to other grades.

It is safe to say that Canadian newsprint manufacturers are not greatly worried over the tariff. The American Press has been, for many years, the successful champion of duty free newsprint. The matter of pulpwood restrictions is as broad as it is long. The cost of their paper is not affected. Adding 10 percent to the cost of Canadian paper will not make the cost of wood to the American mill a cent less. And the chance of dropping the provincial forestry regulations is so remote that the American publisher might just as well begin his campaign for free paper unless he is magnanimous enough to pay a bounty to the American paper mill as recompense for his insistence in the past for newsprint at such a ridiculous price that the forest was sacrificed to meet it.

With regard to the extent of the application of the Penal Clause, it would be interesting to learn whether any European countries have any regulations covering the export of raw woods, and also how the paper mills like the idea of an import duty on pulp, which would be giving a handicap to the mill making its own pulp.

COBWEBS.

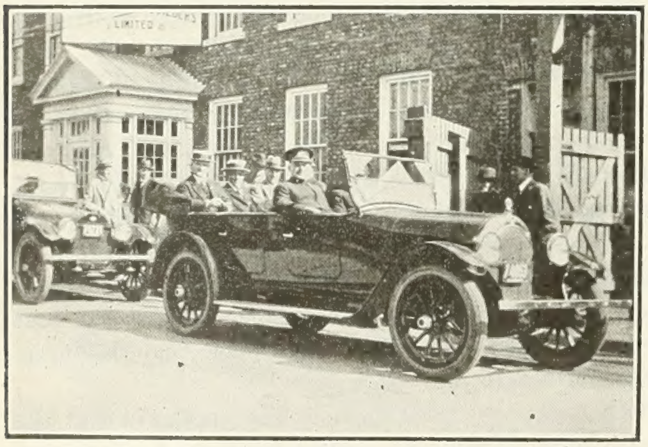
Mr. G. C. Piche, Chief Forester for Quebec, has returned from an inspection of forestry operations in France and Sweden. The Province has sent several talented young men to study forest practice in Europe. All of which is in the direction of adding to the life and value of the Canadian forest.

The account of the meeting of the Canadian Paper Box Manufacturers' Association had to be postponed till next issue.

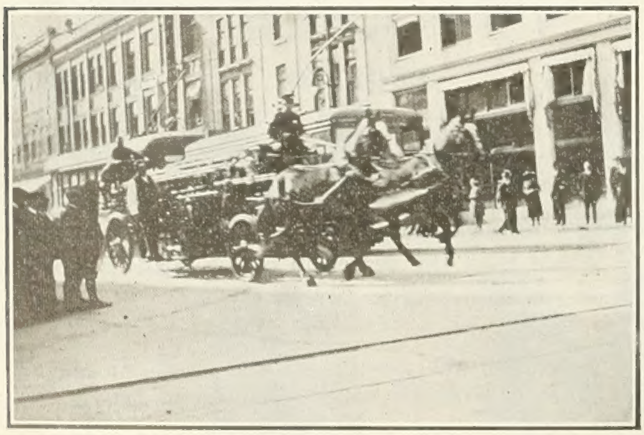
Exports of pulpwood in May 1920 were 1-3 less than in May 1920, in cords.

WHAT THE KODAK GOT.

TECHNICAL SMILERS.
(From left to right) Mr. George Carruthers, Chairman Technical Section; Mr. Percy B. Wilson, President, Canadian Pulp and Paper Association; Mr. A. L. Dawe, Secretary, Technical Section and C. P. & P. A.



THE BIG RED AUTO.
Chief Berthiaume is not taking these "criminals," Geo. Carruthers, Chairman Clem. King of the entertainment committee and "P. B." Wilson to jail, but is personally conducting the Technical Section around Three Rivers and Cap Madeleine.



RIGHT ON THE JOB.
Twenty-five seconds after Chief Berthiaume sent in the alarm, this company of fire fighters was on the spot, 10 seconds later the crew from another station thundered by. People in Three Rivers are proud of their police and fire departments.

BUSH FIRES BAD IN ONTARIO.

Cobalt, July 5.—Bush fires sweeping over Northern Ontario have already claimed two lives and caused losses of property running into millions of dollars. New Ontario is menaced by another conflagration such as visited the country ten years ago, and only early rain can save it. Trainmen coming south from Porquis Junction brought news of the first casualties. Near Holland station, two young men whose names were unknown, seeking to escape the advancing flames, entered a dugout and were burned to death. The fires are reported to be particularly menacing in the vicinity of Timmins and Iroquois Falls. In the lower Abitibi region, 50,000 cords of pulpwood were licked up by the flames yesterday, according to reports.

A considerable quantity of pulpwood, as well as railway property, has been burned at Hearst station, and in the region of Englehart a great quantity of timber has been destroyed.

Smoke from the Ontario fires has been noticeable in the vicinity of Montreal.

G. C. PICHE RETURNS.

Quebec, July 4.—G. C. Piche, chief of the Forestry Service of the province, has returned after spending two months in Europe, the guest of the Canadian Pulp and Paper Association, touring France, Belgium and Sweden, spending a full month in the latter country to study the forestry organization.

''The trip was very well organized and a great benefit to those who wished to study the forestry questions, and I think that the information I have gathered is most precious,'' said Mr. Piche. ''Sweden's forestry organization has been in operation since 1827, and, though not the oldest in Europe, it is a very progressive one. The forests in Sweden are very carefully looked after, and the process is most modern.

''In France the forestry students who have been sent there by the province are getting along very well and are considered among the best pupils. They will certainly be of great use when they return here.''

Newsprint is the bright spot in trade figures for May, in spite of the strike; while shipments for May fell off, the total for two months is ahead of last year. There is a comparative drop, however, because new equipment is not fully employed.

ARRIVAL AT THREE RIVERS.
At the left are Mr. W. Adamson and Harry Kay from Bury, England; in the center are "Jawn" O'Reilly and See-Dee Jentz, with the smiles; Sec. Dawe (hatless) is not selling shoelaces, but distributing T. S. pins.

Provisions of the Fordney Tariff Bill with Respect to Paper and Timber Products

Sections of the Fordney Tariff Bill, introduced in the House of Representatives on June 29, 1921, with respect to paper and paper products and wood and the manufactures thereof, are as follows:

FREE LIST.

The Free List includes:

News Print Paper.

Par. 1658. Standard news print paper: Provided, That whenever the President shall ascertain as a fact that any country, dependency, province, or other subdivision of government forbids or restricts in any way (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly) the exportation of, or imposes any export duty, export charge of any kind whatever, either directly or indirectly (whether in the form of additional charge or license fee, or otherwise), upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp, he may by proclamation declare such ascertainment setting forth the facts; whereupon, and until said proclamation shall be revoked, there shall be levied, collected, and paid upon standard news print paper, when imported either directly or indirectly from such country, dependency, province, or other subdivision of government, a duty of 10 per centum ad valorem, and, in addition thereto, an amount equal to the highest export duty or other export charge imposed by such country, dependency, province, or other subdivision of government, upon either an equal amount of printing paper or an amount of wood pulp for use in the manufacture of wood pulp necessary to manufacture such printing paper.

Wood Pulp.

Par. 1609. Mechanically ground wood pulp, chemical wood pulp, unbleached or bleached: Provided, That whenever the President shall ascertain as a fact that any country, dependency, province, or other sub-division of government forbids or restricts in any way (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly) the exportation of, or imposes any export duty, export license fee, or other export charge of any kind whatever, either directly or indirectly (whether in the form of additional charge or license fee, or otherwise), upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp, he may by proclamation declare such ascertainment setting forth the facts, whereupon, and until said proclamation shall be revoked, there shall be levied, collected, and paid upon mechanically ground wood pulp and chemical wood pulp, unbleached or bleached, when imported either directly or indirectly from such country, dependency, province, or other subdivision of government, a duty of 10 per centum ad valorem, and, in addition thereto, an amount equal to the highest export duty or other export charge imposed by such country, dependency, province, or other subdivision of government, upon either an equal amount of wood pulp or an amount of of wood necessary to manufacture such wood pulp, or an amount of printing paper ordinarily manufactured from such wood pulp.

Par. 1640. Rag Pulp.

Logs, Bolts, Etc.

Par. 1682. Wood: Logs and round, unmanufactured timber, firewood, handle bolts, shingle bolts, gun blocks for gunstocks, rough hewn or sawed or planed on one side, sawed boards, planks, deals, and other lumber, not further manufactured than sawed, planed, and tongued and grooved; clapboards, laths, ship timber; all of the foregoing is not specially provided for: Provided, That if there is imported into the United States any of the foregoing lumber, planed on one side or more sides and tongued and grooved, manufactured in or exported from any country, dependency, province, or other subdivision of government, which imposes a duty upon such lumber exported from the United States, the President may enter into negotiations with such country, dependency, province, or other subdivision of government, to secure the removal of such duty, and if such duty is not removed he may by proclamation declare such failure of negotiations, and in such proclamation shall state the facts upon which his action is taken together with the rates imposed, and make declaration that like and equal rates shall be forthwith imposed as hereinafter provided; whereupon, and until such duty is removed, there shall be levied, collected, and paid upon such lumber, when imported directly or indirectly from such country, dependency, province, or other subdivision of government, a duty equal to the duty imposed by such country, dependency, province, or other subdivision of government upon such lumber imported from the United States.

Par. 1683. Woods: Sticks of partridge, hair wood, pimmento, orange, myrtle, bamboo, rattan, India, malacca, joints, and other woods not specially provided for in the section in the rough, or not further advanced than cut into lengths suitable for sticks for umbrellas, parasols, sunshades, whips, fishing rods, or walking canes.

DUTIABLE LIST.

The provisions for duties upon paper and paper products and articles made of wood are:

Schedule 13.—Papers and Books.

Par. 1301. Printing paper, not specially provided for, one-fourth of 1 per cent per pound and 10 per centum ad valorem: Provided, That if any country, dependency, province, or other subdivision of government shall forbid or restrict in any way the exportation of (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly), or impose any export duty, export license fee, or other export charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwise) upon printing paper, wood pulp, or wood for use in the manufacture of wood pulp, the President may enter into negotiations with such country, dependency, province or other subdivision of government to secure the removal of such prohibition, restriction, export duty, or other export charge, and if it is not removed he may, by proclamation, declare such failure of negotiations setting forth the facts. Thereupon, and until such prohibition, restriction, export duty, or other export charge is removed, there shall be imposed upon printing paper provided for in this paragraph, when imported either directly or indirectly from such country, dependency, province, or other subdivision of government, an additional duty of 10 per centum ad valorem and in addition thereto an amount equal to the highest export duty or other export charge imposed by such country, dependency, province, or other subdivision of government, upon either an equal amount of printing paper or an amount of wood pulp or wood for use in the manufacture of wood pulp necessary to manufacture such printing paper.

Par. 1302. Paper board and pulpboard, including cardboard, and leather board or compress leather, not laminated, glazed, coated, lined, embossed, printed, decorated or ornamented in any manner, nor cut into shapes for boxes or other articles and not specially provided for, 10 per centum ad valorem: Provided, That for the purposes of this Act any of the foregoing less than nine one-thousandths of an inch in thickness shall be deemed to be paper; sheathing paper, roofing paper, deadening felt, sheathing felt, roofing felt or felt roofing, whether or not saturated or coated, 10 per centum ad valorem.

Par. 1303. Filter masse or filter stock, composed wholly or in part of wood pulp, wood flour, cotton or other vegetable fiber, 1½ cents per pound and 15 per centum ad valorem; indurated fibre ware, masks, composed of paper pulp or papier-mache, manufactures of pulp, and manufactures of papier-mache, not specially provided for, 23 per centum ad valorem.

Par. 1304. Papers commonly known as tissue paper, stereotype paper, and copying paper and all papers not specially provided for in this section, weighing not over eight pounds to the ream of four hundred and eighty sheets on the basis of twenty by thirty inches, and whether in reams or other form, 6 cents per pound and 15 per centum ad valorem; if weighing over eight pounds and less than twelve and one-half pounds to the ream, 5 cents per pound and 15 per centum ad valorem; crepe paper, 6 cents per pound and 15 per centum ad valorem: Provided, That no article composed wholly or in chief value of one or more of the papers specified in this paragraph shall pay a less rate of duty than that imposed upon the component paper of chief value of which such article is made.

Par. 1305. Papers with coated surface or surfaces, not specially provided for, 5 cents per pound; papers with coated surface or surfaces, embossed or printed otherwise than lithographically, and papers wholly or partly covered with metal

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*The Pulp and Paper Magazine is able to make what is probably the first full publication in Canada of the provisions of the Fordney Tariff Bill, through the courtesy of the News Print Service Bureau and the Secretary of the Canadian Pulp and Paper Association.

or its solutions (except as herein provided), or with gelatin or flock, 5 cents per pound and 15 per centum ad valorem; papers, including wrapping paper, with the surface or surfaces wholly or partly decorated or covered with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise, except by lithographic process, 4½ cents per pound, and in addition thereto, if embossed, or printed otherwise than lithographically, or wholly or partly covered with metal or its solutions, or with gelatin or flock, 17 per centum ad valorem: Provided, That paper wholly or partly covered with metal or its solutions, and weighing less than fifteen pounds per ream of four hundred and eighty sheets, on the basis of twenty by twenty-five inches, shall pay a duty of five cents per pound and 17 per centum ad valorem; gummed papers, including decalcomania paper not printed, 5 cents per pound; clothlined or reinforced paper, 5 cents per pound and 17 per centum ad valorem; papers with paraffin or wax-coated surface or surfaces, vegetable parchment paper, grease-proof and imitation parchment papers which have been supercalendered and rendered transparent or partially so, by whatever name known, all other grease-proof and imitation parchment paper, not specially provided for, by whatever name known, 2 cents per pound and 15 per centum ad valorem; bags, printed matter other than lithographic, and all other articles, composed wholly or in chief value of any of the foregoing papers, not specially provided for, and all boxes of paper or papier-mache or wood covered or lined with any of the foregoing papers or lithographed paper, or covered or lined with cotton or other vegetable fiber, 5 cents per pound and 20 per centum ad valorem; plain basic paper for albumenizing, sensitizing, baryta coating, or for photographic or solar printing processes, 3 cents per pound and 15 per centum ad valorem; albumenized or sensitized paper or paper otherwise surface coated for photographic purposes, 3 cents per pound and 20 per centum ad valorem; wet transfer paper or paper prepared wholly with glycerin or glycerin combined with other materials, containing the imprints taken from lithographic plates, 30 per centum ad valorem.

Par. 1306. Pictures, calendars, cards, labels, flaps, cigar bands, placards, and other articles composed wholly or in chief value of paper lithographically printed in whole or in part from stone gelatin, metal, or other material (except boxes, views of American scenery or objects, and music, and illustrations when forming part of a periodical or newspaper, or of bound or unbound books, accompanying the same), not specially provided for, shall pay duty at the following rates: Labels and flaps, printed in less than eight colors (bronze printing to be counted as two colors), but not printed in whole or in part in metal leaf, 20 cents per pound; cigar bands of the same number of colors and printings, 30 cents per pound; labels and flaps printed in eight or more colors (bronze printing to be counted as two colors), but not printed in whole or in part in metal leaf, 30 cents per pound; cigar bands of the same number of colors and printings, 40 cents per pound; labels and flaps printed in whole or in part in metal leaf, 50 cents per pound; cigar bands, printed in whole or in part in metal leaf, 55 cents per pound; all labels, flaps, and bands, not exceeding ten square inches cutting size and dimensions, if embossed or die-cut, shall pay the same rate of duty as hereinbefore provided for cigar bands of the same number of colors and printings (but no extra duty shall be assessed on labels, flaps, and bands for embossing or die-cutting); fashion magazines or periodicals, printed in whole or in part by lithographic process, or decorated by hand, 8 cents per pound; decalcomanias in ceramic colors, weighing not over one hundred pounds per one thousand sheets on the basis of twenty by thirty inches in dimensions, 70 cents per pound and 15 per centum ad valorem; weighing over one hundred pounds per one thousand sheets on the basis of twenty by thirty inches in dimensions, 22 cents per pound and 15 per centum ad valorem; if backed with metal leaf, 65 cents per pound; all other decalcomanias, except toy decalcomanias, 40 cents per pound; all other, articles than those heretofore specifically provided for in this paragraph, not exceeding eight one-thousandths of an inch in thickness, 20 cents per pound; exceeding eight and not exceeding twenty one-thousandths of an inch in thickness, and less than 35 square inches cutting size in dimensions, 8½ cents per pound; exceeding thirty-five square inches cutting size in dimensions, 8 cents per pound, and in addition thereto on all of said articles exceeding eight and not exceeding twenty one-thousandths of an inch in thickness, if either die-cut or embossed, one-half of 1 per cent per pound; if both die-cut and embossed, 1 cent per pound; exceeding twenty one-thousandths of an inch in thickness, 6 cents per pound: Provided, That in the case of articles hereinbefore specified the thickness which shall determine the rate of duty to be imposed shall be that of the thinnest material found in the article, but for the purposes of this paragraph the thickness of lithographs mounted or pasted upon paper, cardboard, or other material shall be the combined thickness of the lithograph and the foundation on which it is mounted or pasted, and the cutting size shall be the area which is the product of the greatest dimensions of length and breadth of the article, and if the article is made up of more than one piece the cutting size shall be the combined cutting sizes of all of the lithographically printed parts in the article.

Par. 1307. Writing, letter, note, drawing, handmade paper and paper commercially known as handmade paper and machine handmade paper, Japan paper and imitation Japan paper by whatever name known, and ledger, bond, record, tablet, typewriter, manifold, and onionskin and imitation onionskin paper, Bristol board of the kinds made on the Fourdrinier machine, calendered or uncalendered, 3 cents per pound and 15 per centum ad valorem; but if any of the foregoing is ruled, bordered, embossed, printed, lined, or decorated in any manner, other than by lithographic process, it shall pay 10 per centum ad valorem in addition to the foregoing rates.

Par. 1308. Paper envelopes not specially provided for, folded or flat, if plain, shall pay the same rate of duty as paper from which made and 15 per centum ad valorem; if bordered, embossed, printed, tinted, decorated, or lined, 10 per centum ad valorem in addition to the foregoing rates.

Par. 1309. Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs, 23 per centum ad valorem; hanging paper, not printed, lithographed, dyed, or colored, 10 per centum ad valorem; paper hangings with paper back or composed wholly or in chief value of paper, 5 cents per pound; papers hangings printed, lithographed, dyed, or colored, 20 per centum ad valorem; wrapping paper not specially provided for, 23 per centum ad valorem; blotting paper, 2 cents per pound and 10 per centum ad valorem; filtering paper, 5 cents per pound and 15 per centum ad valorem; paper not specially provided for, 23 per centum ad valorem.

Par. 1310. Books of all kinds, bound or unbound, including blank books, slate books and pamphlets, drawings, engravings, photographs, etchings, maps, charts, music in books or sheets and printed matter, all the foregoing not specially provided for, 20 per centum ad valorem; books bound wholly or in part in leather, the chief value of which is in the binding, not specially provided for, 33-1/3 per centum ad valorem; books of paper or other material for children's use, printed lithograpically or otherwise, not exceeding in weight twenty-four ounces each, with more reading matter than letters, numerals, or descriptive words, 20 per centum ad valorem; booklets, printed lithographically or otherwise, not specially provided for, 7 cents per pound; booklets, wholly or in chief value of paper, decorated in whole or in part by hand or by spraying, whether or not printed, 15 cents per pound; all post cards (not including American views), plain, decorated, embossed, or printed except by lithographic process, 26 per centum ad valorem; views of any landscape, scene, building, place or locality in the United States, on cardboard or paper, not thinner than eight one-thousandths of an inch, by whatever process printed or produced, including those wholly or in part produced by either lithographic or photogelatin process (except show cards), occupying thirty-five square inches or less of surface per view, bound or unbound, or in any other form, 15 cents per pound and 20 per centum ad valorem; thinner than eight one-thousandths of one inch, $2 per thousand; Christmas and other greeting cards, printed lithographically or otherwise, or decorated in whole or in part by hand or by sprayying, 30 per centum ad valorem.

Par. 1314. Photograph, autograph, scrap, post-card and postage-stamp albums, and albums for phonograph records, wholly or partly manufactured, 23 per centum ad valorem.

Par. 1312. Playing cards, 60 per centum ad valorem.

Par. 1313. Paper and paper board and pulpboard, including cardboard and leatherboard or compress leather, embossed, cut, die-cut, or stamped into designs or shapes, such as initials, monograms, lace, borders, bands, strips, or other forms, or cut or shaped for boxes or other articles, plain or printed, but not lithographed, and not specially provided for; paper board and pulpboard, including cardboard and leatherboard or compress leather, laminated, glazed, coated, lined, printed, decorated, or ornamented in any manner; press boards and press paper, 23 per centum ad valorem; stereotype-matrix mat or board, 28 per centum ad valorem; wall pockets, composed wholly or in chief part of paper, papier-mache, or paper board, whether or not die-cut, embossed, or printed lithographically or otherwise; boxes, composed wholly or in chief value of paper, papier-mache, or paper board, and not specially provided for; manufactures of paper, or of which paper is the component material of chief value, not specially provided for, 26 per centum ad valorem.

Schedule 4.—Wood and Manufactures of

Par. 401. Timber, hewn, sided or squared otherwise than by sawing (not less than eight inches square) and round timber used for spars or in building wharves, one-half of 1 cent per cubic foot.

Par. 402. Logs of fir, spruce, cedar, or Western hemlock, $1 per thousand feet board measure: **Provided,** That any such class of logs cut from any particular class of lands shall be exempt from such duty if imported from any country, dependency, province, or other subdivision of government which has, at no time during the twelve months immediately preceding their importation into the United States, maintained any embargo, prohibition, or other restriction (whether by law, order, regulation, contractural relation or otherwise, directly or indirectly) upon the exportation of such class of logs from such country, dependency, province, or other subdivision of government, if cut from such lands.

Par. 403. Brier root or brier wood, ivy, or laurel root, and similar wood unmanufactured, or not further advanced than cut into blocks suitable for the articles into which they are intended to be converted, 10 per centum ad valorem.

Par. 304. Logs, sawed boards, planks, deals, and all other forms of cedar commercially known as Spanish cedar, lignumvitae, lancewood, ebony, box, granadilla, mahogany, rosewood, satinwood, Japanese white oak and Japanese maple, not further manufactured than sawed, 15 per centum ad valorem; veneers of wood, and wood unmanufactured, not specially provided for, 20 per centum ad valorem.

Par. 405. Paving posts, railroad ties, and telephone, trolley, electric light, and telegraph poles of cedar or other woods 10 per centum ad valorem.

Par. 406. Hubs for wheels, posts, heading bolts, stave bolts, last blocks, wagon blocks, car blocks, heading blocks, and all like blocks or sticks, roughhewn, sawed or bored, 10 per centum ad valorem.

Par. 407. Pickets, palings, hoops, and staves of wood of all kinds, 10 per centum ad valorem.

Par. 408 Shingles, 50 cents per thousand.

Par. 409. Casks, barrels, and hogsheads (empty), sugar-box shooks, and packing boxes (empty), and packing-box shooks, of wood, not specially provided for, 15 per centum ad valorem.

Par. 410. Boxes, barrels, and other articles containing oranges, lemons, limes, grape fruit, shaddocks or pomelos, 20 per centum ad valorem; **Provided,** That the thin wood, so called, comprising the sides, tops, and bottoms of orange and lemon boxes of the growth and manufacture of the United States, exported as orange and lemon box shooks, may be reimported in completed form, filled with oranges and lemons, by the payment of duty at one-half the rate imposed on similar boxes of entirely foreign growth and manufacture; but proof of the identity of such shooks shall be made under regulations to be prescribed by the Secretary of the Treasury.

Par. 411. Reeds wrought or manufactured from rattans or reeds, whether round, flat, split, oval, or in whatever form, cane wrought or manufactured from rattan, cane webbing, and split or partially manufactured rattan, not specially provided for in this section, 20 per centum ad valorem. For the purpose of assessing duties, hand-made reeds or cane shall be held to be comparable in value to machine-cut reeds or cane of corresponding size. Furniture made with frames wholly or in part of wood, rattan, reed, bamboo, or malacca, and covered wholly or in part with rattan, reed, grass, or fiber of any kind, 50 per centum ad valorem; split bamboo, 2 cents per pound; osier or willow, including chip of and split willow, prepared for basket maker's use, 25 per centum ad valorem; all articles not specially provided for, wholly or partly manufactured of rattan, bamboo, osier, or willow, 40 per centum ad valorem.

Par. 412. Toothpicks of wood or other vegetable substance, 25 per centum ad valorem; butchers' and packers' skewers of wood, 25 cents per thousand.

Par. 413. Porch and window blinds, baskets, curtains, shades, or screens of bamboo, wood, straw, or compositions of wood, not specially provided for, 25 per centum ad valorem; if stained, dyed, painted, printed, polished, grained, or creosoted, 30 per centum ad valorem.

Par. 414. House or cabinet furniture wholly or in chief value of wood, wholly or partly finished, and manufactures of wood or bark, or of which wood or bark is the component material of chief value, not speciallly provided for in this section, 25 per centum ad valorem.

VALUATION

Provisions for the valuation of imported articles and determination of purchase conditions are:

Sec. 402. Value.—Except as otherwise provided by law, the word "value" wherever used in this Act or in any other law relating to the appraisement or the classification of imported merchandise shall mean the price on the date of exportation of the imported merchandise at which comparable and competitive products of the United States were ordinarily sold or freely offered for sale in the usual wholesale quantities and in the customary wrappings, coverings, and containers, whether holding liquids or solids, to all purchasers in the ordinary course of trade, including all costs, charges, and expenses, in the principal market or markets of the United States; or, when such value can not be ascertained to the satisfaction of the appraising officer, shall mean the value of the imported merchandise on said date for sale (whether or not there shall be an actual sale), for consumption or use in the United States in its condition, including wrappings, coverings, and containers, whether holding liquids or solids, as imported. In determining the value for sale, appraising officers may take into consideration, among other matters, the selling price or cost of production of comparable products of the United States and of articles made therefrom or from like imported materials, not sold in usual wholesale quantities or not sold or freely offered for sale to all purchaser in the ordinary course of trade, or not sold at all, and the selling price in the United States of compa [illegible] market value or cost of production of the imported merchandise in the foreign country, and may exclude or include all or any costs, charges, and expenses, including duties, and also profits and commission, if any, keeping always in mind the legislative intention that duties ad valorem shall be assessed upon the fair market value of the imported merchandise in the United States. No pretended sale or offer for sale, and no sale or offer for sale tending to establish a fictitious market, shall be held to establish value as herein defined; nor shall a value substantially raised or lowered at the time of exportation otherwise than in the ordinary course of trade be deemed to be of such value.

Sec. 403. Purchased.—Imported merchandise shall be deemed and held to have been "purchased" within the meaning of this Act when the price or amount to be paid or remitted therefor by a person in the United States to a person in a foreign country or to his agent or representative in the United States was fixed, agreed upon, or determined at the time of or prior to the exportation of the merchandise, whether the merchandise be shipped directly to the purchaser or to an agent of the seller or to the seller's branch house in the United States for delivery.

Sec. 404. Otherwise than by Purchase.—Merchandise shall be deemed and held to have been imported otherwise than by purchase within the meaning of this Act if, and when, the same is shipped from a foreign country to the United States without a price or consideration paid or to be paid or remitted by a person in the United States to a person in a foreign country or to his agent or representative in the United States having been fixed, agreed upon, or determined prior to such shipment.

RECIPROCITY

Provisions for the negotiation of reciprocity of agreements are:

TITLE III

Special Provisions.

Sec. 301. That whenever the President of the United States, with a view to securing reciprocal trade with any foreign country, dependency, colony, province, or other political subdivision of government, shall enter into a commercial treaty therewith concerning the admission into any such country, dependency, colony, province, or other political subdivision of government, of the goods, wares, and merchandise of the United States and their use and disposition therein, deemed to be for the interests of the United States, and in such treaty, in consideration of the advantages accruing to the United States therefrom, shall provide for the reduction of the duties imposed by this Act upon such goods, wares, or merchandise as may be designated therein of the country, dependency, colony, province, or other political subdivision of government with which such treaty shall be made as in this section provided; or shall provide for the transfer from the dutiable list of this Act to the free list thereof of such goods, wares, and merchandise, being the natural products of such foreign country, dependency, colony, province, or other political subdivision of government and not of the United States; or shall provide for the retention upon the free list of this Act of such goods, wares, and merchandise now included in said free list as may be designated therein; and when any such treaty shall have been duly ratified by the Senate and approved by Congress, and public proclamation made accordingly, then and thereafter the duties which shall be collected by the United States upon any of the designated goods, wares, and merchandise from the foreign country, dependency, colony, province, or other political subdivision of government with which such treaty has been made shall be the duties specified and provided for in such treaty, and none other.

Sec. 302. That with a view to securing reciprocal trade and regulating the commerce of the United States with countries, dependencies, colonies, provinces, or other political subdivisions of government, producing and exporting to the United States any article of merchandise upon which a duty is imposed by the laws thereof and for these purposes, whenever and so often as the President shall be satisfied that the government of any country, dependency, colony, province, or other political subdivision thereof, imposes duties or other exactions, limitations, or embargoes upon like or similar products of the United States, which, in view of the duties imposed thereupon when imported into the United States, he may deem to be higher and reciprocally unequal and unreasonable, he shall have the power, and it shall be his duty, to suspend by proclamation said provisions of the laws of the United States imposing the duties upon such article or merchandise of such country, dependency, colony, province, or other political subdivision of government, when and for such time as he shall deem just, and in such cases and during such suspension, upon the importation of any such or similar article or merchandise into the United States whether the same is imported in the same condition as when exported from the country of exportation or has been changed in condition by manufacture or otherwise and whether the same has been imported directly from the country of production or otherwise, duties shall be levied, collected, and paid upon such article or merchandise the product of such designated country, which shall by the President be ascertained and proclaimed to be equal to the duties or other exactions, limitations, or embargoes imposed thereupon when exported from the United States to such country, dependency, colony, province, or other political subdivision of government.

Sec. 303. That whenever the President of the United States, with a view to securing reciprocal trade with foreign countries shall, within the period of three years from and after the passage of this Act, conclude an agreement with any other country or countries concerning the admission into any such country or countries of the goods, wares, and merchandise of the United States, deemed to be for the interests of the United States, and in such agreement, in consideration of the advantages accruing to the United States therefrom shall provide for the reduction during a specified period not exceeding five years of the duties imposed by this Act, to the extent of not more than 20 per centum thereof, upon such goods, wares, or merchandise as may be designated therein of the country or countries with which such agreement shall be made as in this section provided for, and when proclamation by the President of such agreement shall have been made, then and thereafter the duties which shall be collected by the United States upon any of the designated goods, wares, and merchandise from the foreign country with which such agreement has been made shall during the period provided for be the duties specified and provided for in such agreement.

To secure information to assist the President in the negotiation of such agreements are are provided for in such section, and to estimate the amount by which the duties specified in the agreement shall be lower than the duties provided for in other sections of this Act, in order to be a fair equivalent of the concessions granted by any other country or countries under the terms of the agreement, the President shall direct the United States Tariff Commission to make such investigations and to prepare such reports as may be deemed necessary.

DATE OF TAKING EFFECT

Except where otherwise specifically provided, the Act is to take effect on the day following its passage.

A Persian philosopher, being asked by what method he had acquired much knowledge, answered, "By not being prevented by shame from asking questions where I was ignorant."

Some papermakers would get ahead faster if they would ask more questions. Send them in to the Pulp and Paper Magazine.

He doth not lack an almanac whose youth is in his soul.—Holmes.

In the last report from the Dominion Bureau of Statistics we find that the export of wood pulp to the United Kingdom in May 1921 was $697,081 compared with $196,656 in May 1920. For April and May 1921 these exports were only $13,000 less than for the same period last year. Shipments to the United States, however, were lamentably lower.

More than 75 per cent of Sweden's forests are not owned by the public, quite the reverse of conditions in Canada. Yet Sweden puts back into the forest about 50 per cent of the annual revenue therefrom. This income is about the same as the Crown lands bring to Quebec, but this Province appropriates only 10 per cent of its income from the forest for the management and up keep of this important source of wealth.

It seems that the paper trade just now is largely stationery.

It is very gratifying to have the paper mills starting work again, while differences between men and managements are being adjusted by arbitration. There has been remarkably little ill-feeling shown on either side. The principal thing to observe now is that the settlement should not be construed as a "victory" for any one.

Exports of book papers made up only 34 per cent of total paper sales abroad in May, a decrease of about 50 from May 1920.

WHERE MANILLA IS "THE" PAPER.

Cutting bills, yard requisitions, job tickets, production slips—all require a paper of sufficient strength and body to withstand rough usage, bad weather and frequent handling. Yet, because of the large quantity of such forms needed in the everyday work about the factory, low cost is essential.

The railways have long recognized the many advantages of Writing Manilla for such purposes. Its use in other industries is growing rapidly. The economy, the durability and strength of Writing Manilla make it the logical stock for forms that have to endure the rough handling of the shop or the yard.

Now, when every industry is striving hard to reduce its costs, is a good time to teach your customers the many uses of Writing Manilla. Planing mills, machine shops, foundries, factories of almost every sort, are among your prospects. Get more business for yourself by introducing buyers to Writing Manilla.

Writing Manilla made in Canadian mills by Canadian workmen is fully equal in quality to any form manilla. Specifying "Made in Canada" on your order to the dealer not only assures you of high-grade stock, but helps to keep the wheels turning in Canadian factories.

"Help to bring Canadian dollars back to par by advertising Canadian goods on Canadian paper."

A Student Apprentice in a Paper Mill

By A. B. COPPING, Winner of the Essay Contest of the Technical Section.

(Continued from Page 689)

Formation of Sheet.

Whenever possible samples were taken at the press-rolls and dried out for moisture — and some samples were even taken just before the couch roll when the mill was shutting down. Similarly great numbers of consistencies of the stock and of white water in all parts of the system were taken and in many cases Fishburn Tests of the slush were made. The averages of these tests have been arranged in their proper order on a diagram of "Sheet Formation" (Fig. 5).

Dryer Steam.

Production for running period, 99,676# = 49.838 tons.
Sheet before dryers 31.6% Stock and 68.4% water.
Sheet after dryers 91.08% Stock and 8.92% Water
8.92% of 99,676 = 8,891 # Water after dryers
91.08% of 99,676 = 90,785 # Bone-dry stock
This is same amount of stock before dryers.
Before dryers 31.6% = 90,785 #

$$100\% = \frac{90785 \times 100}{31.6}$$

= 287,294 # Stock and Water
90,785 # Stock

196,509 # Water before dryers
8,891 # Water after dryers

187,618 # Water evaporated by dryers

$$\frac{187618}{62.5} = 3{,}002 \text{ cu. ft. for } 49.838 \text{ tons,}$$

i. e., 60.2 cu. ft. water evaporated per ton paper produced.

A check test was worked out for this and the result found to be 60.0 cu. ft. water evaporated per ton paper produced.

Retention of Stock on Wire.

19-7-20.

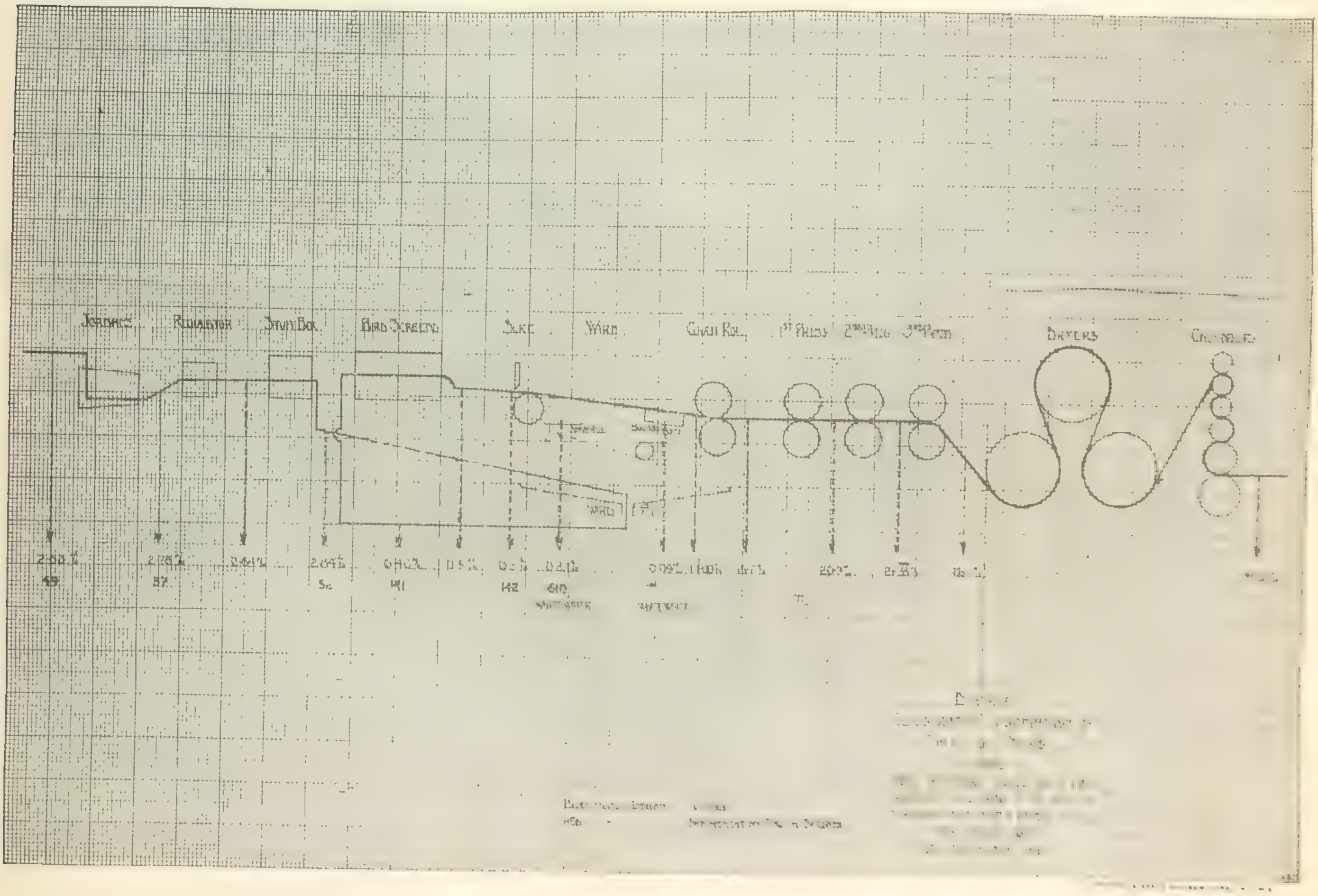
Flow of Stock from Bird Screens to the finished paper, taken in steps.

Assume: —
(1) 60 tons air-dry paper made per 24 hours.
(2) Speed 625 ft. per min. Time = 150"

Leaving Wire: —
The paper leaving the Calenders is 8% moisture.
The paper leaving the Wire is 82% moisture
or 18% of sheet leaving the wire is fibre and this is 92% of the finished paper, i. e., of 60 tons.
Thus 92% of 60 — 18% of slush coming off the wire expressed in tons per day, or

$$\frac{92}{100} \times 60 \times \frac{100}{18} = 306.6 \text{ tons of slush coming off wire per day} \qquad \text{(I)}$$

18% of this = 55 tons is fibre and 251.6 tons is water = 76.4#/Min. is fibre and 350#/Min. is water.



Note. — The heavy figures are Sedimentation Time in Seconds. One of these, 610, and two of the percentage figures, 0.24 p.c. and 0.09 p.c., refer to White Water. — Ed.

Coming on Wire:—

The slice is raised 1½" and with this opening 405 cu. ft./Min. flow through. = 18,200 tons/day.
At a consistency of .5% there is 126.5# fibre coming on the wire/Min. (II)

Going through to the Save-All under the breast-roll is 205 cu. ft. of slush/Min. at a consistency of .24%, making 30.7 # fibre going through the wire per minute. (III)

or (II) — (III) = 95.8 # stock/Min. being carried down the wire beyond the Save-All (IV)

The white water pumped (for showers, etc.) plus the discharge from the Nash pump equals approximately the amount of white water that is being drawn through the suction boxes, when conditions are normal, and equals 5,000 tons per day; this is at a consistency of .07%, or = 4.65 #/Min. of fibre being drawn out of the paper. (V)

Thus (III) + (V) is not being used to make paper but is returned to the system. Let the amount of fibre falling through the wire between the Save-Alls and the suction boxes = (VI)

Now (IV) — (V) = 91.15 + (VI) = Amount fibre available to make paper, and = (I) = 76.4# per Min. or (VI) = 13.75#/Min. of fibre falling through the wire between the Save-Alls and the suction boxes.

Thus, the retention on the wire

$$= \frac{\text{fibre coming on wire} - \text{fibre falling through}}{\text{fibre coming on wire}}$$

$$= \frac{126.5 - (30.7 + 13.75 + 4.65)}{126.5} = 61\%$$

Talc.

Deductions from the observations made during the Talc run of July 19-22, when 5 per cent talc was added to the furnish of No. 2 machine:

1. When the run began a very good grade of paper was produced, strong, clear and good finish, and no particular trouble was experienced.

2. The retention of talc in the paper was about 1.75 per cent and thus the talc eventually collected in the system and a greater and greater proportion of talc was being carried through the slice per unit of time and therefore, since the volume of flow was constant, the amount of fibre going through per unit of time was getting less and less, and therefore the sheet was getting less and less fibre in it, and wilder and wilder paper was being produced.

3. Due to the nature of talc a considerable amount was being sucked through the sheet into the first press felt and hence the pores became gradually filled up and the paper of necessity clung to it. Thus difficulty occurred in carrying the sheet over. To a less degree due to the pressure of the rolls a similar state of affairs was going on in the second and third press felts.

4. By examination with the microscope of the stock and paper it was seen that

(a) Sulphite was good quality and long.

(b) Groundwood was poor; a lot of fines and flour and the main fibres short. Considerable dirt and slivers were also apparent.

(c) Talc seemed to take little part in the sheet formation; wild spots were well defined and holes occurred at these thin spots, but apparently were caused by improper aid given to the talc by the groundwood in the sheet formation. In addition quite long pieces of bark(?) were noticeable.

5. Blue Glass test showed poor groundwood, just as the microscope did.

6. From consistency tests it was seen that after and during the twentieths (of the month), the consistency was high and the sedimentation time very high — 160 on # 2, while on # 1 the consistency was normal but the sedimentation time very high. Thus on # 1 the presence of talc from the white water system was being felt and the stock slowing up. To counteract this the Paper-maker took out water, which during the afternoon of the twenty-first (of the month) raised the consistency, but in doing so also lowered the sedimentation time. (The reason for this does not seem apparent.) Conditions of separation became worse and worse and the consistency rose steadily.

7. The percent of talc in the dry paper was as follows on # 2.

Day	Hour	Percent
21st	10.00	3.00%
"	21.30	2.41%
22nd	14.00	2.17%
23rd	03.00	0.00%

It thus appears that it took about 15 hours for the talc to disappear.

8. To summarize, we may say that the test was unsatisfactory, production was lowered, broke accumulated, washing twice a day became necessary, the morale of the machine workers got very low, the machine-tenders ingenuity and patience were taxed too much by the disruption of events and the quality of the paper became very variable.

Temperature.

It was our aim this summer to demonstrate that if the groundwood was right there would always be the same running conditions winter and summer. The temperature both in the wire-pit and in the room would be different. — A series of temperature observations were made and we are able to state that this winter an attempt will be made by means of a steam automatic temperature control to keep the water in the wire-pit at the same temperature as it was this summer. The amount of fresh dry air sufficient to take up the moisture given off at the dryers has been calculated and the hot air fan will be run at corresponding speed and it is hoped to keep the room at summer temperature.

The dead air above the hoods coming in contact with the cold roof causes condensation. This is to be remedied by playing on the ceiling a film of hot fresh air.

Conclusion.

With these conditions taken care of, if the stock is continually uniform, we can expect better running conditions and we can insist if there is any trouble on the machine, that the trouble is not in the stock, but purely mechanical. Also, even though we have successfully operated using 8.3 % Sulphite in newsprint, it may reasonably be expected that this already low rate may be maintained for long periods and perhaps cut out altogether.

Forestry in Sweden—Part 2

By EDWARD BECK, Publicity Dept., Canadian Pulp and Paper Association.

Stockholm, Sweden, June 5,—Co-operation between the State and the owners of the private forests accounts in a large measure for Sweden's pre-eminence in forest development. The State's liberality in providing the means, its wisdom in enacting reasonable laws for the preservation of the forests and to provide for their continuity, combined with the private owners' willing compliance therewith, constitute the second most important factor.

There is apparently no conflict between the State and the private owners in these matters. Swedish forests have been under legal control for more than seven centuries. There are a few general laws applicable to the entire country. Different laws apply to different provinces or districts. Their enforcement and supervision are invested in local forest commissions, one for each province, which in turn is answerable to the State Forest Service, which has general supervision both of the forest laws and of the State-owned forests. The commissions usually comprise in their membership a representative of the State, one of the private owners and one of the immediate district concerned. Besides enforcing the law and arbitrating disputes, they maintain forest nurseries and distribute plants and seeds for purpose of reforestation. They encourage the planting of idle lands and promote local interest in tree culture. Their expenses are met by means of a small tax imposed on the stumpage values of the timber cut in their respective districts. They are also subsidized by the national and the provincial governments and derive additional revenue from the sale of seeds and plants. They serve to obviate some of the objections which the owners of the private forests might otherwise offer to interference with their rights of private property in their forests.

In 1918 it was found necessary to pass a stringent general law forbidding the cutting of young growing forest unless and until it was shown that such cutting was essential to their improvement. Exception was made in the case of land destined for agricultural purposes, pastures, building sites, etc. In enforcing this law the commissions are empowered to fine disobedient owners, to confiscate wood illegally cut and to prohibit absolutely for stipulated periods any further cutting on the areas involved. In such cases the owners have the right of appeal to the courts. This law is the result of excessive cutting during the recent war period when the demand for lumber and its price were both abnormal.

Laws fixing a minimum diameter limit for cutting, such as prevail in Canada, have been applied from time to time in several of the provinces. They have usually proven unsatisfactory and are not regarded as having contributed to the general improvement of the forests.

Speaking generally, it may be said that the State's efforts are directed principally to securing a greater volume of reproduction. The private owners, while not neglecting this important feature, are said to excell in improved logging operations and in forest upkeep. No new laws are enacted for the control of the forests until there has been full and free deliberation between the governmental authorities and the private owners. New laws and regulations are usually the result of mutual agreement.

The Swedish public forests are managed by the Swedish Forest Service, operated as part of the national Department of Agriculture. The Service is governed by a director general and six assistant directors, with district foresters, assistant foresters, forest engineers, etc., for each of the several districts into which the public forests are divided. The Service is organized on semi-military lines. It has a distinctive uniform and a very pronounced esprit-de-corps. Its personnel includes young men of high social standing to whom the remuneration paid, which is less than unskilled laborers receive in Canada, is probably a secondary consideration.

The Forest Service has complete control over the state forests and either supervises or manages the other publicly owned forests, such as those owned by various counties, villages, parishes and communities, many of which, by the way, derive considerable income from the proceeds of their forest possessions. It has charge of the execution of the laws governing the management of all forests and of cutting and all other regulations. Its officers pay visits of inspection to private as well as public forests to see that the laws are being observed.

An official estimate made in 1908 placed the value of the state forests at that time at $62,000,000; of other public forests at $21,000,000 and of private forests at $334,000,000, or a total of $417,000,000. These values are said to have advanced from 25 to 35 per cent in the meanwhile.

Taxes on private forests have risen considerably during and since the war and now amount, in some instances, to as much as 40 to 45 per cent. on the income derived from them. There is, however, no important tax imposed on standing timber, as it has been thought that such a tax besides being an inducement to unnecessary cutting might deter private capital from being employed in reforestation.

The State Forest Service derives its revenue from the sale of standing timber and in other ways. It shows an annual surplus. It expends about 50 per cent of its income on forest improvements and upkeep. This is in marked contrast to what the Canadian provinces are doing for their Crown lands. Quebec, for example, which is more liberal in its forest appropriations than most, has 45 millions of acres under license against Sweden's less than half that extent. Quebec derives an annual income of about $4,500,000 from its Crown lands and appropriates for their upkeep, administration and improvement about $400,000. Sweden, on the other hand, out of an annual revenue of about $5,000,000 puts approximately $2,500,000 back into her forests.

Education plays an important part in Swedish forestry. The government spares no expense in educating and training picked men for forest work in both its higher and its less important branches. A college of forestry has been in existence here since 1828. It is now located on beautiful grounds on the outskirts of Stockholm in buildings especially erected and well adapted to its purpose. It gives instruction in both theoretic and practical forestry, its course covering three years. The entrance requirements include nine months of practical training in the field as well as a certificate of graduation from a high school or college. It is said to be without an equal in Europe. Its courses are in such demand that would be entrants have to go through a preliminary elimination trial, which only two-thirds of those entering survive. Its graduates are in great demand for both governmental and private service.

In connection with the college the government maintains a forest laboratory which devotes all of its efforts to research on questions bearing on forestry. It has two sections, one devoted to forest management and to investigations in regard to the growth of stands, and the other mainly to geological and botanical subjects. It is exceptionally well-equipped and ably staffed. A visit disclosed a number of important and interesting experiments in progress. The laboratory maintains experimental areas in all parts of the country and is doing a work that no private agency is competent to undertake.

The State also maintains a number of schools of a lesser grade, situated throughout the country chiefly for the training of forest rangers. There are eleven of such schools in all. At each school there is an experimental forest area for the practical instruction of the students, who are also required to spend part of their school year in the forests, themselves doing actual forest work. The course usually comprises a full year of study and the object sought is practical insight into forest management and the supervision of forest operations. Charcoal burning, which is an important part of the industry, is also taught.

A visit of inspection was made to one of the best of these rangers' schools located near Bispgarden in middle Sweden, where it has been established since 1898. The school has a director and assistant director who live on the premises. It employs two rangers and other necessary staff. It graduates eighteen students every year. A primary education is sufficient for admission. The average age of the students is twenty-two years. There are many more applicants than can be accommodated. The students are lodged and boarded at the school free of charge, their only expense being for books, etc. Each student is allowed 25 kronor a month ($6.25). The studies are mostly of a practical character and include forest accounting, ditching, loggers' camp construction and other co-related subjects. The school maintains a nursery as well as an experimental plot. It also operates an extensive plant for the extraction of seeds from tree cones. It buys the cones in large quantities from the private forests and other sources and markets the seeds all over the world, deriving a large revenue therefrom.

The work that this school and its fellows are doing in training men for practical work in the forests cannot be overestimated. In the opinion of the visitors it supplied one of the most important elements in Sweden's progressive forest policy.

Reforestation as practiced in Sweden and forest fire protection will be treated in future articles.

PAPER MILL CAMP BURNS.

Sault Ste. Marie, Ont., July 5.—The Spanish River Pulp & Paper Company's camp at Millwood, Mile 132, on the Algoma Central, has fallen prey to the bush fire which started there last Tuesday when lightning struck a ridge of pines during a thunderstorm. Seven houses, cook camp and barns are gone. The residents of the settlement have gone to Mile 138, where they are being housed temporarily, and 100 men are still fighting the fire, which has now reached the railway.

British Trade News

From our London Correspondent.

London, June 20, 1921.

One of the mouth-pieces of the newspapers in London, "The Newspaper World" makes the following caustic remarks this month: "It is stated that not only is paper sold by wholesale stationers to the general public at the same price as to printers, but that it is sold direct by mills to printers' customers at mill prices." Anything for an argument — whether it is ridiculous or otherwise. But here is the policy of the British consumer as depicted by the "Newspaper World's" correspondent on Paper Notes: "The newspaper proprietor to whom the price of newsprint is a part of the standing charges upon the cost of daily or weekly production naturally goes for cheap paper — the cheapest that can be produced, provided that it meets his other requirements as to quality, etc. — and to most of them it matters little whether the paper,, which they look upon as their raw material, comes from British or foreign mills. If the British made paper is equally as cheap as the foreign, the orders will certainly go to the British mills because of the quicker delivery and other similar conveniences. Buyers will even be willing to give a fraction of a penny more for the home product, because of the much larger amount of capital locked up and unproductive when foreign paper is bought, owing to payment having usually to be made at sight of documents, and to much heavier stocks having to be carried to guard against uncertainty of delivery". I have from time to time pointed out that the newsprint consumer is so indifferent he does not care where his paper comes from so long as he gets it cheap — Sweated Labor or otherwise — and he has now suddenly awakened to the fact that by dealing with the British mill he can obtain credit and be sure of his delivery of paper. Indeed some of the consumers who are advocating cheap newsprint imports at cheap prices today were the very people who had to turn round some time ago and use Newfoundland paper because of the failure of the foreign supply. Every day the printer and consumer of newsprint put pen to paper to agitate in favor of cheap foreign imports, they make a case for the British producer of paper who wants his industry — and his 53,000 people employed in it — included in the Safeguarding Industries Bill to be protected against foreigners whose exchange is at a debased rate.

Home Truths for Printers.

The other day Mr. A. W. Foster, B.A., Secretary of the British Papermakers' Association, was one of the guests at a luncheon, in London, given by the Master Printers. He told them that the British mills were well able to supply all the wants of printers, though at present the mills were on short time and the coal miners' strike was having a serious effect upon the paper industry of the country. Two-thirds of the paper consumed in the country — roughly speaking — was produced by British labor and last year the output reached one and a quarter million tons of paper. Touching on raw materials he pointed out how the mill owners were handicapped in having to contract ahead. In the past they were dependent on Scandinavia for pulp supplies, but now the new world would be called in to redress the balance of the old and he believed their Canadian friends were going to give them their supplies of pulp in larger quantities and at lower prices. It is very gratifying to hear these words from Mr. Foster. I hope the British papermaker will take the same intereest in Canadian pulp as Mr. Fred Becker developed many years back — he being one of the great pioneers of Canadian pulp in the British market. But Mr. Foster in these days of Safe-Guarding Industries Bills has left the British printers a nice little legacy in the shape of a motto — and the printers received the motto with cheers — when he told them: "Our motto — papermakers, master printers and wholesale stationers together — would, I trust, in the future be — British paper for British purposes, Empire products for Imperial use." It was a gentle hint to "trade within the Empire", the post war slogan so easily overlooked nowadays.

Decline in Imports.

A review of the imports of paper, cardboard, strawboard, mill and leather board for May last, shows a big reduction in comparison with 1920.

Total imports of newsprint, etc., for five months were 840,896 cwts. as against 972,601 cwts in 1920. The supplies for May alone reached 269,887 cwts., as compared with 264,258 cwts. in May 1920. Notable supplies are now arriving from Newfoundland, but no paper of this quality was shipped from Canada, whereas in May 1920 the Dominion sent 372 tons.

The imports of wrapping and tissue papers in May reached 63,355 cwts., as against 397,833 cwts. in May 1920.

The total imports of all kinds of paper and boards in May amounted to 477,196 cwts., as against 1,500,895 cwts. in 1920; and for the five months January to May, 2, 153,755 cwts. — a decline of 2,959,088 cwts. under the imports for the same period in 1920.

Big Drop in Exports of British Mills.

The total exports of British mills and the paper industry in general amounted in May to 74,334 cwts., compared with 191,166 cwts. in May 1920. The figures for the first five months of the year total 648,050 cwts., a decrease of 145,009 cwts. compared with last year. Shipments during May to Canada were low in the case of printing paper (23 cwts. as against 115 cwts. in May 1920) and higher in writing paper (90 cwts. as against 14 cwts.)

British exports in May were down less than half those of 1920. There is also a notable drop in shipments of coated papers and paper hangings, while packing and wrapping papers fell off from 188,310 cwts. in 1920 to 44,862 cwts. in 1921 for the first five months of the year.

Many mills still remain closed in the United Kingdom, owing to the Miners' strike in the coal industry, while others are running on short time.

Wood Pulp Imports—Canadian Supplies.

There is a big falling off in the supplies of wood pulp from all sources in May, except from Canada. Total, 22,215 tons in May 1921, 38,283 tons in May 1920. The value of the 22,217 tons received this year from Canada is £292,353 and Norway's value of 87,735 tons is £1,057,773.

Bleached Chemical (Dry): The only shipments received in May last were 41 tons from Canada and 316 tons from Norway, the values being respectively £1,590 and £17,690. The total shipments from January to May were 5,155 tons, as against 14,095 in 1920.

Groundwood (Dry): From Canada 21 tons in May. Total for five months, 1,105 tons from all sources as against 15,366 tons in 1920.

The pulp market in England today is dead, as regards new business, and there are no signs of the slightest revival. Prices are unchanged.

Conclusions on British Industry.

A few weeks ago I gave a review of the British paper and pulp industry, and the figures quoted in this issue of the "Pulp and Paper Magaine" will give Canadians a small insight into how things are moving this side of the Atlantic. Out of all the workers in the paper mills less than half are unemployed or on short time work, because of the coal miners' strike, and taking the whole of industry of the United Kimgdom well over 2,000,000 people are idle, So that taking the imports of pulp from all sources which have never been known to drop to such a low ebb when the ratio of trade is taken into consideration, it will easily be seen why the pulp market is lifeless today. The country is teeming with discontent and if negotiations are not soon brought to an amiable settlement, the paper workers of the United Kingdom will be joining the great army of the unemployed. The papermakers will then be suspended between the devil of the deep sea, because they will have the coal miners' strike on one side and on the other the paper workers' strike. This strike fever is ruining the pulp trade, killing the paper industry and turning the country up-side-down. The Secretary of the Papermakers' Association predicts, personally, that when the general depression is over the paper industry will be among the first to feel the flow of the revitalizing blood of prosperity through their veins. But the coal miners are in such a deplorable state now and the supplies of coal so low in the country that it would be fully October or November before any benefit could be reaped from coal supplies in the mills. The situation is serious, no matter from what view-point it is taken. The economic position was bad enough after the 1870 war, but the present post-war situation is ten times worse and noone seems to be able to get at the bottom of it, particularly in the strikes.

Millboards, Card and Pasteboard Imports.

During May Canada shipped 204½ tons of mill boards to the United Kingdom. The total imports reached 1,068 tons and the supplying countries were Germany, Sweden, Finland, United States of America, Norway.

Strawboard was imported to the extent of 3,924 tons, from Germany, United States and the Netherlands, the latter country enjoying most of the trade with the United Kingdom. Canadians would do well to take note of this in view of the surplus raw material at their disposal in the Dominion.

Cardboard and pasteboard arrives from Sweden, Norway, Germany, Netherlands, France, Switzerland and Austria. The supplies in May reached 901½ tons.

Paper Workers Balloting.

Owing to the cost of living falling — according to the Ministry of Labor — the Employers Federation of Papermakers propose a reduction of 4 cents per hour in men labor. If the cost falls another 15 points, another 3 cents per hour comes off the wages and so on pro rata. These terms are submitted to the workers.

The unions have now decided to take a ballot on the terms. The men want 3 cents off now; the employers say 4 cents. It remains to be seen how the ballot will work out. Naturally the workers cannot understand the rise or fall in the cost of living because legislation is so precarious. For instance the cost of living has gone down 9 points in June, but on the first July a landlord can put 10 per cent increase on a tenant's rent and is doing it except in the case of mill hands who occupy houses under their employers free or on special terms. Should the ballot be against the acceptance of a 4 cent per hour reduction, I can foresee considerable trouble in the paper industry and particularly at a time when it is not wanted. However, the British papermaker is very sensible in labor matters and he may be able to throw oil on the troubled waters.

Norway's Strike Settled.

Labor conditions have improved in Norway and the strike is ended. The pulp and paper mills are now being opened again, but it will take some time to get things going.

In Germany the paper and pulp industry is getting a fair share of work and business. Sweden is depressed and Scandinavians report that that the German and Finnish mills are turning out keen competitors for the Swedes.

THE CORNISH CHINA CLAY INDUSTRY.

The annual meeting of the English China Clays, Ltd. was held at the Institute of Chartered Accountants, London on Wednesday May 18th. Mr. Reginald Martin (chairman and managing Director) presiding. In moving the adoption of the report and balance sheet the chairman made some very important observations upon the trade in general and also upon the magnitude of the Companies successful operations. Mr. Martin said when it is borne in mind that the results which had been achieved on an output of less than half the normal production they would, he felt sure, appeal to the shareholders as eminently satisfactory. The year opened with a distinct improvement in the demand for China Clay in March 1920 and from then on till July, trade was brisk, almost approaching what was long hoped for—a boom. In August and September there was a slight drop which continued worst until the coal strike effectually killed trade generally.

Stocks are represented by the considerable figure of £224,311 6s. 11d. investments at cost £27,126 16s. 6d., cash at bankers and in hand £68,353 14s. 7d. Debtors and amounts paid in advance £118,645 11s. 0d. and sundry assets at agencies abroad £11,435 10s. 11d. The Preference Shares £293,934 show an increase of £24,505, some representing stocks taken over from the two Companies purchased. The ordinary shares £1,269,000 show an increase of £74,000. Sundry creditors are £129,676 and the general reserve £5000. The balance brought forward from last year is £2941 14s. 0d. and the profit for the year £149,766 3s. 2d. making a total of £152,707 17s. 2d. The balance of preliminary expenses had ben entirely liquidated, and, after allowing for depreciation of stock, the Board recommended a transfer to the general reserve of £10,000, which will leave a substantial increase to carry forward, so that all concerned in that meeting will have the satisfaction of knowing that the financial position of the Company is a very strong one indeed. You have now a magnificient property said the chairman and capable of yielding all qualities of china clay from the very best that can be procured in the market, through all the grades down to the commonest, and in enormous quantities. All you want now is a return to normal conditions and good trade. One of the main essentials to the success of all big undertakings is industrial peace. I have great confidence in the innate common sense of the moderate British working man, declared Mr. Martin, and I have not the slightest doubt that it will eventually assert itself. It is only by lower prices, decreased cost of production and industrial peace that there can be any hope of a return to full-time employment and prosperity. There is one qualifying feature in connection with this Company, and that is that over 12 per cent of the employes are holders of some 10,000 ordinary shares, which indicates without doubt their entire confidence in the Company, and it gives them a direct interest in its welfare. The Chairman expressed the hope that this movement would increase because it was a source of great strength to the Company.

The question of colloidal clay had received the careful attention of the Board of Directors but through various intricacies their investigations had not reached the stage at that moment to enable them to lay before the meeting any definite report.

Mr. T. Medland Stocker, J.P. one of the joint managing Directors in seconding the adoption of the report and balance sheet said that last year had been a very difficult period and the result shown was certainly very satisfactory when the difficulties with which they had to surmount were taken into consideration. At present they were confronted with a general depression in trade, but they were hoping for a better period in the latter six months of the current year. They were hoping for something in the nature of a trade revival when the stocks of articles manufactured from china clay became exhausted. The central portion of Europe, which had taken very large quantities before the war, had absorbed very small quantities since, but the directors hoped that the whole position might soon improve and that trade relations might be resumed and that they would shortly renew their usual business activity.

The Chairman also moved a fixed dividend of 5 per cent, less income tax, on the ordinary shares, making with the interim dividend 7½ per cent for the year. Mr. Walter Sessions seconded and remarked that there was no sympathy among their workers in Cornwall or Devon with the present attitude of unrest and strike. Their employees realized the necessity of getting back to work and of getting the cost of production down. There were markets for China Clay the world over, and not only markets they could recreate, but extending markets. He was very certain when they had recovered from the temporary rebuff there was a big future for the China Clay industry. Lieut.-Col. A. O. Evans and Mr. R. Large were re-elected directors.

GRAND MERE MAN WON GOLF MATCH.

Grand Mere put itself on the golfing map at Beaconsfield last Saturday through the splendid victory of Marcus Greer in the amateur championships with a gross score of five strokes under his nearest competitor and through the carrying off of the handicap prize by Leon W. Campbell, captain of the local team. The few other honors that were handed out were allowed to go to entrants from other clubs.

Self-satisfaction is a treacherous chair with three cracked legs.

THE ALDEHYDE CONTENT OF SULPHITE ALCOHOL.

By Dr. Rudolf Sieber, Kramfors.

Svensk Pappers-Tidning, September 15, 1920.
(Translated for the Pulp and Paper Magazine by Dr. Paul Barthlow.)

Neuberg's researches on the fermentation of sugar in the presence of salts of sulphurous acid have many points of interest for the sulphite manufacturer. For instance he shows that fermentation takes place according to a scheme which in its simplest form may be expressed by the equations

(1) $C_6H_{12}O_6 = 2C_2H_5OH + 2CO_2$

(2) $C_6H_{12}O_6 = CO_2 + CH_3CHO + C_3H_8O_3$

The first equation gives the course of sugar fermentation in a weak acid solution, consequently under conditions which generally occur in the production of alcohol. The causes of this fermentation in the presence of sulphite compounds are set forth by Neuberg as follows: From grape sugar — besides some intermediate products not isolated hitherto — an acid, $CH_3COCOOH$ is formed, which breaks up into carbon dioxide and acetaldehyde. The latter is finally reduced to alcohol, and glycerin is formed. Both products occur in normal sugar fermentation, but in smaller proportion than in the presence of sulphite. These theoretical considerations are of practical interest for the manufacturer of sulphite alcohol, for its high proportion of aldehyde, as given by Hagglund, may be explained by the quantity of sulphite compounds in the waste liquor. The formation of aldehyde during the fermentation of sulphite liquor furnishes a basis of testing in the mills. For this purpose the lye was neutralized and the sulphurous acid determined; after fermentation it was tested for alcohol and aldehyde. The results with liquor from the mill were tabulated thus:—

	SO_2 g/100 c.c. of lye*	alkali contents g/1000 c.c.	aldehyde g/1000 c.c.	ald. × 100 / alc.
1	0.17	8.71	0.129	1.48
2	0.18	7.65	0.126	1.65
3	0.20	8.05	0.165	2.05
4	0.21	8.31	0.182	2.19
5	0.23	7.18	0.184	2.56
6	0.26	7.69	0.192	2.51
7	0.29	7.30	0.197	2.70
8	0.30	8.10	0.208	2.57

* The acidity throughout was .04-.05n, with phenolphthalein.

These figures are of doubtful stability. Laboratory tests were, therefore, undertaken. The determination of acetaldehyde is not easy. The hydroxylamine method of Brochet and Cambier proved best adapted for purposes of comparison. Values with the hydroxylamine method are fairly constant at about 9-10 per cent under the correct numbers (Pure aldehyde in dilute solutions of hydroxylamine hydrochloride gave values equal to 91.2 per cent of the actual values). The results of this method are recorded in the following table.

	SO_2 g/100 c.c. of lye before fermentation	SO_2 g/100 c.c. after fermentation	alcohol g.-1000 c.c. of wort	aldehyde g.-1000 c.c. of wort	ald. × 100 / alc.
1	0.132	....	7.61	0.044	0.58
2	0.138	....	7.69	0.043	0.56
3	0.142	0.146	7.20	0.040	0.55
4	0.150		6.78	0.045	0.66
5	0.171	0.165	8.62	0.062	0.72
6	0.184	0.178	6.84	0.058	0.85
7	0.195	..	6.75	0.059	0.87
8	0.220	....	8.55	0.124	1.45
9	0.225	0.235	7.25	0.122	1.68
10	0.229	0.227	8.80	0.121	1.38
11	0.230	.	7.80	0.136	1.75
12	0.236	0.227	7.00	0.129	1.85
13	0.248	0.246	8.22	0.148	1.80
14	0.250	0.255	8.40	0.178	2.10
15	0.250	0.252	7.49	0.149	1.99
16	0.256	..	6.92	0.139	2.00
17	0.256	0.250	6.89	0.139	2.02
18	0.286	.	6.81	0.191	2.88
19	0.288	0.290	7.60	0.189	2.50
20	0.294	0.292	8.32	0.196	2.36
21	0.300	....	6.69	0.200	3.00
22	0.330	....	6.82	0.220	3.23
23*	0.412	....	6.82	0.285	4.19

* With Calcium Sulphite sludge.

Note: The acidity was .04-.05n throughout.

In practice, it is found that lyes which contain a small proportion of SO_2, whether inorganic or organic compounds, yield less aldehyde than lyes rich in SO_2. Lyes which come from mills making bleached pulp are of better constitution than those from the production of strong pulp. Thus, in general, the quantities of aldehyde in the liquor depend upon the quality of the pulp, and, naturally also, on the method of cooking — directly or indirectly. It is therefore suggested that the difference might be modified by neutralizing the liquor with lime, and introducing air, by this means oxidizing the sulphite into sulphate. In effect, after a trial of this process, oxidation with air had an inconsiderable result. It would hardly be profitable in practice, owing to the presence of organic compounds of SO_2 which are only slowly oxidized by the oxygen of the air. These organic compounds seem generally to increase the quantity of aldehyde.

Liquor from the manufacture of strong sulphite pulp contains about 0.23-0.28 per cent of SO_2, of which a large part is present as an organic compound after neutralization. In the case of bleached pulp the proportion of SO_2 in the neutralized liquor falls to 0.12 per cent. The quantity of inorganic compounds is also less. It is established that lyes from the bleached pulp digesters require much less lime than those for strong pulp. It is clear, therefore, that mills which produce bleached pulp operate under the best conditions, at least in this respect.

It is not without interest to record the analytical results of the Ethyl company from the investigation of samples of alcohol from various sources. The following mills had the smallest quantities of aldehyde in the alcohol.

1. Skoghall ..	0.07 g.	per 100 c.c. of alcohol
2. Skutskar ..	0.12 g.	" "
3. Edsvalla ..	0.15 g.	" "
4. Stromsbruk	0.20 g.	" "
5. Vallvik ..	0.25 g.	" "
6. Gota	0.40 g.	"

It does not seem to be a mere accident that the first mills, except Skutskar, make bleached pulp, and

(Continued on page 728).

UNITED STATES NOTES

Striking employees of paper mills in the United States and Canada have voted to accept the proposal made by manufacturers to submit to arbitration the wage dispute that caused some mills to shut down May 1 and others May 11. The arbitration plan calls for the selection of a board of seven, three to represent employees, three employers and a seventh, chosen as umpire by both sides. The board's finding will be retroactive. The ballot of the unions showed the men to be almost unanimous in favoring arbitration as a means of settling the strike. The International Paper Company is not a party to the arbitration agreement. Eleven other concerns are. The manufacturers selected C. H. L. Jones, of Sault Ste. Marie, Ontario; E. B. Murray, vice-president of the Union Bag and Paper Company, New York, and Floyd S. Carlisle, president of the St. Regis Paper Company, to represent them. The employees selected as their representatives, John P. Burke, president of the International Pulp, Sulphite and Paper Mill Workers, Jeremiah T. Carey, president of the International Brotherhood of Papermakers, and J. T. Foster, of the Dominion Trades and Labor Conference. Frank Irvine, of Ithaca, a former member of the Public Service Commission, New York State, and at one time dean of the Law School of Columbia University, was named as impartial chairman of the arbitration board. The arbitration committee this week begins a tour of the paper mill centers of Canada and the United States. First hand data concerning the working and living conditions of the workers will be obtained. This data, together with the demands made by the men in various localities, will form a basis upon which arbitration will be begun.

In an effort to protect the cyclone swept area of the Olympic Peninsula in the State of Washington from fire, Secretary of Agriculture Wallace has issued an order, effective July 1, prohibiting smoking within the area during the fire danger season. Aerial air patrols also will be maintained. Nearly seven billion feet of timber blown down by the terrific storm last January 29 is contained in the half million acre area swept by the storm.

The Peerless Paper Company, North Dayton, Ohio, sustained a loss estimated at $35,000 through a fire last week that destroyed saw materials and furnished stock in its store rooms. None of the machinery was damaged. Most of the loss was covered by insurance.

At a dinner meeting held recently at Portland, Maine, the Cost Association of the Paper Industry organized an Eastern local division. An organization committee was formed, the members of which agreed to make arrangements for holding the next meeting at Augusta, Me., on September 14. The members of this Committee include A. D. Pomeroy, Eastern Manufacturing Co., chairman; J. E. Hyde, S. D. Warren Co.; H. E. Blackman, Pejepscot Paper Company; G. L. Smith, Rogers Fibre Co.; J. E. Whitman, S. D. Warren Co.; L. J. Catheron, Eastern Mfg. Co.

Robert J. Cullen, a pulp and paper engineer widely known to the industry in the South and East, is at the head of the recently organized Nashville Pulp and Paper Mills which, he announces, will shortly begin operations at Nashville, engaging in the manufacture of a wide variety of paper products. 500 people will be employed at the start. The initial operation according to Mr. Cullen, will produce 75 tons per day of chemical wood pulp, employing the sulphate process. The mill property contracted for involves a large tract of land and five of the enormous buildings formerly used in cotton purification and drying processes. There will be constructed in addition, a large boiler plant, liquor recovery plant, causticizing units, wood preparation rooms and a number of storehouses. This will involve an outlay of approximately $500,000.

The recently formed Valley Paper Mills has selected a site for its plant at Neenah, Wis. It is announced that construction work will be started in the near future. The capital stock of the company is $1,500,000. Its product will consist of glassine, grease-proof, onionskin, manifold, colored and embossed papers.

FLOOD PREVENTION REQUIRES FORESTS.

New York, June 27.—The work of the Pittsburg Flood Commission for forestry in Pennsylvania has been recognized by the naming of that Commission, as represented by Maj. W. M. Jacoby of Pittsburg, on the National Forestry Program Committee, on which such important national groups as the American Newspaper Publishers Association, the American Forestry Association, the American Paper and Pulp Association, and the National Lumber Manufacturers Association are represented.

The Pittsburg Flood Commission has been working for the establishment of forest areas on the headquarters of the river which meet at Pittsburg, as the most important step in the prevention of the devastating floods which sweep the Ohio valley.

Maj. Jacoby's first cooperation with the National Forestry Program Committee was when he appeared before a Congressional committee early in January, and aided in securing increased appropriations for national forestry development. Later the Pittsburg Flood Commission and the Pittsburg Chamber of Commerce endorsed the Snell forestry bill, which was sponsored by the Committee on which Maj. Jacoby has been made a member.

The program of state forestry legislation by the forestry committee of the American Paper and Pulp Association as a basis for state cooperation with federal forestry officials in all its essentials the same as the Pennsylvania State forestry policy, and was the basis of three new forestry laws passed by the Ohio legislature, in which passage the National Forestry Program Committee assisted.

Archibald Alcorn and Fred. A. Hews, of Blackville, and Wendell P. Jones, of Woodstock, N.B., have incorporated as A. Alcorn, Limited, with an authorized capitalization of $2,000,000, head office Blackville, to take over as a going concern the business of Archibald Alcorn at Blackville, as lumber and pulpwood dealers and operators.

PULP AND PAPER NEWS

The printers' strike in Toronto still drags on. Last week, a communication was addressed to each member of the Toronto Typothetae (the employers' organization) by Mr. Edward Randall, chairman of the Managing Committee of the National Pressmen's Union, local No. 10, and of the National Press Assistants' Union, local No. 1. Mr. Randall addressed this communication to the individual members of the Typothetae in the belief that many members of that organization were not aware of the length to which those for whom he speaks were prepared to go, in order that (as he expresses it) "all might continue harmoniously in our trade in Toronto." From this communication it would appear that the pressmen and assistants were prepared to return to work on a forty-eight hour basis. But certain other of the features contained in their proposition, as now appears from an Open Letter over the signature of the Typothetae, published last Saturday, did not commend themselves to that organization's Committee which submitted a counter-proposition as its final offer. The negotiations over this counter-proposition seems to have broken down on the question of the "fair shop" and "no discrimination." For, in its Open Letter, the Toronto Typothetae state: "A question was addressed to Mr. Randall in effect as follows: If ten men had left a shop on strike and five of their positions had already been satisfactorily filled, would you expect the shop to take back all ten strikers? Mr. Randall's reply was: 'I would think so, or none.' This reply in itself shows that, while your (the Pressmen's) Committee had accepted the principle of no discrimination, they did not intend to abide by it." As mentioned, it seems to be over this rock that the negotiations split. In view of promises contained in their advertisement for help, as well as of their repeated pledges of "open shop for the future," it is difficult to see how the employing printer could come to any agreement whereby, in order to make room for those now on strike, they should undertake to get rid of men who have done so much to help them out in their present difficulties. But the recent publicity given to the overtures made on the pressmen's behalf seems to have convinced the general public that the latter are very anxious to get back again. The bookbinders are already back at work—such of them as can get it. Should the pressmen and employers come to terms—and, if so, it looks as though they would be the latter's terms—that would still leave the printers obdurate. And, no doubt, they would prove a rather hard nut to crack. At the same time, there would be no "unbroken front" presented by the three branches of workers. One can well imagine that it has been far from an agreeable surprise to the strikers that the employers have contrived to "carry on" as well as they have unquestionably done hitherto.

The new tariff bill in the United States contains provisions with relation to print paper, wood pulp and wood for manufacture of wood pulp, which are causing some disquiet to newspaper publishers in the United States. The bill provides for a duty on print paper, (not newsprint) of ¼ cent per lb., ten per cent. ad valorem. To this is appended a provision that is (apparently) aimed at restrictions on the export of pulp wood parts of Canada. If any country, or sub-division thereof, imposes, directly or indirectly, export charges or restrictions on print paper, wood pulp or wood for manufacture of wood pulp, the President is empowered to enter into negotiations for removal of such restrictions or charges. If these are not removed, and until they are removed, the bill makes it mandatory that there be imposed and added to the regular duty the following: "An additional duty of ten per cent, ad valorem, and, in addition thereto, an amount equal to the highest duty or other export charge imposed by such county, dependency, province or other sub-division of government, upon either an equal amount of printing paper, or an amount of wood pulp, or wood for use in the manufacture of wood pulp, necessary to manufacture such printing paper." The effect of this would really be to impose three sets of duties on exportations of print paper, wood pulp, or wood for making pulp, in case of restrictions or export charges in Canada.

The International Paper Company, last Friday, notified its striking employees that it would reopen all its plants on Tuesday of this week and extend to them "the privilege of coming back to work on the proposition of the 24th May, which means that our employees will receive approximately ninety-five per cent. more wages than they did in 1914." The Company's statement proceeds: "If a sufficient number of our former employees accept this proposition to operate the plants, we will start them up as near full capacity as our business will permit. If you do not accept this proposition on Tuesday, 5th July, the Company will arrange to start such of its plants as it desires to have in operation to take care of the requirements of its customers." A strike was called at this Company's and other paper mills on the 1st May. The International Company has declined to reach an agreement on the same terms as that arrived at by the other mills and their striking employees whereby an arbitration board of seven was appointed to settle questions in dispute, the employees meanwhile to receive the wages they were getting when they walked out.

A former Torontonian, Mr. Walter S. Dickey, has acquired the control of the Kansas City Journal, one of the oldest and best established papers in the Prairie States. Mr. Dickey is also head of the Dickey Clay Products Company, and prior to embarking in business in the United States, he was engaged in commercial work in Toronto, being, at one time, connected with the Eby, Blain Company.

The Ross Can Company, of Bowmanville, Ont., manufacturers of fibre containers, has installed a good deal of new equipment lately, and intends to embark on a new line of sanitary containers for canneries, for which a large demand is reported.

A large groundwood mill—one of [illegible] tons capacity—is likely to be erected shortly at Haileybury, Ont. It is believed that some prominent Toronto men are among those behind the proposition.

Technical Section

REVIEW OF RECENT LITERATURE.

A-11; K-9. Wilkinite, a New Loading Material. SYDNEY D. WELLS. **Paper,** xxvii, 14 (Dec. 8, 1920). "Wilkinite" is the name given to a highly colloidal clay which occurs in certain parts of the intermountain regions of the United States in beds between layers of marine shales. Comparative physical tests were made on wilkinite and on the English china clay used at the Forest Products Laboratory, Madison, Wis., under the same conditions and by the same chemist. These showed that while wilkinite contains more coarse material than the English china clay, the latter contains very much more material of medium coarseness and less "clay". Wilkinite suspensions as low as 4 lb. per 100 will remain in complete suspension through long periods and they have the power to hold in suspension English china clay in amounts up to at least twice the amount of wilkinite present. The viscosities of the Wilkinite-English china clay suspensions are practically the same as with wilkinite alone and in amounts up to 3lb of wilkinite per 100lb of water are not sufficiently great to interfere seriously with pumping. Semi-commercial paper trials were made using china clay, wilkinite, and mixtures of china clay and wilkinite. The use of wilkinite caused a great increase in retention, which was a result probably of the highly colloidal nature of the wilkinite which served to hold the English china clay in suspension as it ran on to the wire, and, as the sheet formed, the loading was more evenly distributed. The slowing effect of the wilkinite was very evident, and the wire mark was diminished on account of the better distribution of the loading material. The color of the sheet when a mixture of clay and wilkinite was used was not noticeably affected; but when wilkinite alone was used the color was noticeably duller; this might prove objectionable in papers where a high degree of whiteness is required, but for the majority of book and magazine papers this could easily be corrected. Commercial runs were also made, and the following indications were given by these tests: (1) Wilkinite used in amounts up to 30 percent of the total loading material, the remainder being English china clay, yields a paper with superior appearance, finish, and feel; (2) wilkinite used in amounts indicated above does not affect the color of white paper more than can be corrected with small amounts of blue coloring agents; (3) in the runs using wilkinite with English china clay, the greater the proportion of wilkinite, the greater retention; (4) wilkinite causes a slowing of the stock on the wire with obvious benefit to the formation and distribution of the loading material and reduction of the wire marks. —A. P.-C.

A-13. Testing Dyes for Colored Papers. B. K. STEADMAN. **Paper,** xxvii, 16 (Dec. 22, 1920). The following procedure is said to give satisfactory comparative results when elaborate equipment for testing dyes is not available, if proper precautions are taken in carrying out the test. Equal weights of the sample to be tested and of a standard color to which it is to be compared are dissolved in equal amounts of water. A laboratory sample of stock is prepared containing the same relative proportions of the various stocks as the paper being made. This is shaken in a fruit jar containing some water and small pebbles or shot, and then transferred to a big bowl with a definite amount of water. The color, size, filler, etc., are added in the same proportions and in the same order as on a mill run and all are then well mixed with an egg beater or something similar. Some of the pulp is poured on to the edge of the fourdrinier wire and covered with a piece of dry soda pulp (smooth side down) and run through the couch rolls, then through the first press rolls. It is dried by hand on one of the driers and is finally calendered.—A. P.-C.

A-15. The Constitution of Cellulose. KURT HESS **Z. Electrochem.,** xxvi, 232-51 (1920); **Paper,** xxvii, 13 (Dec. 1, 1920); 14 (Dec. 3, 1920); 15 (Dec. 15, 1920). Translation by Clarence Jay West.—A. P.-C.

B-7. Cost in Wood Operations from the Manager's Point of View. D. A. CROCKER, **Paper,** xxvii, 16 (Dec. 22, 1920). The essential information for the manager of the woods operations is the current cost of his operation. The nature of the current information which he should have, the method of calculating the costs, the increased cost of labor of arriving at the costs, and some of the advantages of a good accounting system, are described.—A. P.-C.

B-9. Snell Forestry Bill before U. S. Congress. Paper, xxvii, 17 (Dec. 29, 1920). Text of the address of Chief Forester Col. W. B. GREELEY before the meeting of the State forestry officials at Harrisburg, Pa., Dec. 8, 1920, discussing the part of the federal government and of the State governments in the forest policy; the part of the former should be readiness to give financial assistance to any State for fire protection and reforestation when the State effected the proper regulatory steps. The text of the Snell forestry bill is given.—A. P.-C.

C-5. Spraying Wood for Fire Prevention as Preservation. E. SUTERMEISTER. **Paper,** xxvii, 16 (Dec. 22, 1920). Results of a series of experiments testing out the spray system of wood protection devised by F. J. HOXIE. (1) The wood from the top of the pile where it is exposed to the sun and wind contains less moisture as the size of the logs decreases, but when moistened by spraying the smaller sticks become saturated with moisture sooner than the larger ones. (2) The wood in the lower part of the pile is considerably more moist than that in the middle of the upper sections, and there is a very sharp change in moisture content within a comparatively few feet of the ground, sticks lying directly on the ground being very much wetter than those four or even two feet up. (3) Wherever the logs are subjected to the spray continuously they become quite uniformly wet with 52 to 60 percent moisture, but where the spray strikes them only part of the time, according to the direction of the wind, they take up considerably less moisture. (4) In no case was there any drying out of the very wet logs while they were under the influence of the spray, indicating that the amount of water delivered was more than was necessary to replace normal evaporation. Superficially it was slimy, very black, and in many places covered with a network of white mold; but a closer inspection of the logs and of the chips prepared from them proved the greater part of the wood was sound. The observations covered only a comparatively short period; but the writer has confidence in the system for the prevention of both fire and decay.—A. P.-C.

E-1. Analysis of Sulphur Burner Gases and Sulphite Acid. A SANDER, Darmstadt. **Paper,** xxvii, 14 (Dec. 8, 1920); 17 (Dec. 29, 1920). Critical review of Reich's, Adolf Frank's, Lunge's and Sander's methods of analyzing sulphur burner gases, and of Winkler's Hohn's, Oman's, Hagglund's, Streeb's, Goldberg's, and Sander's (iodate method, and mercuric chloride method) methods of analyzing sulphite "acid", with special emphasis on the advantages and accuracy of Sander's method, both for the gas and for the liquor analyses.—A. P.-C.

E-4. Acid Reclaiming in Sulphite Cooking. O. L. BERGER. **Paper,** xxvii, 16 (Dec. 22, 1920). Brief review of the various methods of recovering the gas and liquor relieved during cooking in the sulphite process of pulp manufacture.—A. P.-C.

E-5. New Reagents for Cellulose. CLARENCE JAY WEST. **Paper,** xxvii, 19 (Jan. 12, 1921). According to a recent German patent (Willhelm Schlosser, Ger. patent No. 328,729) wood and similar cellulose-containing materials upon being treated with primary and secondary aliphatic and aromatic amines, either as such or in solution in alcohol, benzene, and similar solvents, are decomposed so that the cellulose remains undissolved. Richard Schwartzkopf has patented (Ger. patent No. 328,730) the use of acid chlorides sulphuryl chloride, phosphorus oxychloride, thionyl chloride, acetyl chloride, benzoyl chloride, etc.) alone, or in solution in an indifferent solvent (benzene, carbon tetrachloride, etc.) for the preparation of cellulose from wood and similar raw materials. This is not as satisfactory as the use of aromatic amines, for in most cases a supplementary treatment with caustic soda is necessary to obtain a pure cellulose.—A. P.-C.

E-0. Sulphite Cellusose. A. KLEIN. **Woch. Papierfabr.,** xli, 41 (1920); **Paper,** xxvii, 16 (Dec. 22, 1920); 17 (Dec. 29, 1920. A review of the various formulas proposed for cellulose, of the reactions which probably occur in the sulphite digester (cleavage of the lignin and its transformation into soluble compounds by esterification, condensation of bisulphite with aldehyde or ketone groupings, addition of bisulphite to a double bond, sulphonation), influence of the kind of wood, time of cutting, habitat, and method of cooking on the yield and on the chemical and mechanical properties of the pulp obtained.—A. P.-C.

K-1; R-13. Scientific Control in the Paper Mill. E. G. MILHAM, Bryant Paper Company. **Paper** xxvii, 13 (Dec. 1, 1920). Hints on the scientific control of raw materials (pulp, chemicals, colors, size, twine, felts wire, belting) and the processes of manufacture in the paper mill.—A. P.-C.

K-7. Characteristics of the Niagara Beater. W. H. BURNS. **Paper,** xxvii, 19 (Jan. 12, 1921). The main characteristics of the Niagara beater are: high backfall and sloping bottom, hollow midfeather allowing the rear bearing of the roll shaft to be placed inside, restricted opening back of the roll between the backfall and the rear hood, close running doctor which is carried 3/8 in. from the roll, bandless roll, quick emptying dump valve which is controlled by a lever located in the floor outside the tub.—A. P.-C.

K-10. Zellkoll-amal Sizing. SIGISMUND FERENCZI, editor of **Papier-Zeitung. Paper,** xxvii, 18 Jan. 5, 1921). In the "Zellkoll-amal" process the principal feature is that animal glue is added to the pulp in the engine not in solution but as a jelly. This is disintegrated in the engine to fine particles in a semi-solid state,which cover the fibres and melt only when the paper web has been heated on the driers to a certain extent. The fibers are thus pasted together to a uniform body and the paper is sized throughout. The glue is made up into a jelly by hardening (generally with formalhyde or aluminum formate) either in the beater or before adding to the pulp. A much greater proportion of the loading material is retained in paper sized with zellkoll-amal than in paper sized otherwise.—A. P.-C.

K-11. Sectionalized Motor Drive for Paper Machine. Paper, xxvii, 16 (Dec. 22, 1920). Description of the sectionalized motor drive for paper machines recently installed by the General Electric Company at the will of the Crown-Willamette Paper Company, at West Lynn, Oregon.—A. P.-C.

K-0. A New Standard for Mixed Paper. THOMAS HEBERLY. **Paper,** xxvii, 15 (Dec. 15, 1920). A brief description of the difficulties which the user of mixed waste papers has to overcome in the preparation of his stock owing to the very poor assorting of such grades. —A. P.-C.

K-0. Equipment for Practical Papermaking. JOHN J. SULLIVAN. **Paper,** xxvii, 15 (Dec. 15, 1920). A discussion of the importance of proper maintenance of the equipment of paper mills to obtain proper yield and quality, including sulphite equipment, rag room equipment, washers, beater equipment manipulation and care, paper machines and their equipment (screens, flow box, table rolls, felts, driers and calenders). —A. P.-C.

M-7. Automatic Control of Temperature and Humidity. Paper, xxvii, 19 (Jan. 12, 1921). At the Forest Products Laboratory, Madison, Wis., a device has been developed for maintaining the temperature and humidity constant in certain rooms and has been in continual operation and has given satisfaction for several years. The principle on which the apparatus works is that of cooling the air to the dew point temperature for the desired atmospheric conditions, saturating it with moisture at that point, and then heating it without addition of moisture to the desired room temperature. For any given room temperature it is possible to get any humidity desired simply by choosing the temperature at which the air is saturated. Drawings of the apparatus and further details concerning its installation and operation may be had on application to the Forest Products Laboratory.—A. P.-C.

Q-0. Paper Cores for Cement Pilings. DELPHIA PHILLIPS. **Paper,** xxvii, 16 (Dec. 22, 1920). Brief description of a method recently devised for building hollow cores of papers which are used as a foundation for building up cement piles 18 to 20 ins. in diameter. —A. P.-C.

R-1. Argentina's Pulp Resources. Paper, xxvii, 18 Jan. 12, 1921). A mill is being constructed by Barranquoras, in the Chace territory on the Parana river, which will use a species of bog grass called **paja brava.** A. P.-C.

R-2 Classification of U. S. Patents. Paper, xxvii, 19, 19-20 (Jan. 12, 1921). Classification of the two main divisions of U. S. patents of interest to pulp and paper manufacture, **92 Papermaking and Fiber Liberation,** and **93 Paper Manufactures.**—A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 2nd July. In practically all lines of paper, business remains quiet, and, in fact, almost stationary. Normally, the months of June, July and August are dull months in the paper trade, but the present is a time of quite phenomenal slackness. "We have just go tto worry through," said the representative of one of the large manufacturing houses to the writer today: "Things will right themselves some time, but we have not got to the end of the slack period yet—not by a long way. In addition to the dullness which we normally expect in the paper trade at this season of the year, there are a whole lot of other factors in evidence at present which all tend to accentuate dejected and depressed conditions. For one thing, there is the general trade lassitude which is affecting our own, in common with nearly every other branch of industry. Among other ill effects, this has meant a tremendous falling-off in the total volume of advertising, which, of course, has directly, and very detrimentally, affected certain departments of our industry. Then the printer's strike has still further accentuated the depression we are experiencing. Altogether, there is little prospect of any genuine and substantial improvement in the near future." On practically all sides, this is the tale one hears—a tale that becomes monotonous alike in the telling and in the hearing. The net result is, naturally, that, in almost all lines, prices remain practically stationary. In no line is there any price reduction of any importance to report. For the plain fact of the matter is this—and it is an aspect of the case as to which both manufacturers and jobbers are in agreement—that any conceivable reduction in prices would have no effect in stimulating further buying beyond the occasional and spasmodic purchasing which is already taking place. To such a pitch of diminished vitality has the paper market attained. With regard to the printer's strike, the prospects of settlement by agreement seems more remote than ever. At the same time, present indications are that the strike will "peter out" of itself, in time. One of the employers with whom the writer recently had a talk described the situation as "getting better every day" from their point of view. No doubt the strike is causing the employing printers a very considerable amount of annoyance and inconvenience. But, somehow or other, they are managing to get out the work that is immediately necessary. Moreover, the sympathy of business men with the employers at this juncture is so pronounced that they are ready to make large allowances for delayed work and even for defective workmanship, so long as the employers hold out. The employing printer quoted above amplified his statement that the situation, from the employers' standpoint is "getting better every day" as follows: "Every day that passes it becomes more evident that trade revival can only take place if, and as, production costs are lowered. Thus the folly of expecting shorter working hours without diminished wages every day becomes more apparent, as this must inevitably mean a heightening of production costs—that is to say, if the forty-eight hour week that a man has been doing has been an honest forty-eight hour week—one up to the limit of his capacity—then a forty-four hour week at the same wages cannot fail to mean an increase in production costs. It means, too, an increase in production costs at a moment when, owing to a falling market, the trade cannot stand it. Further, every day that passes sees the cost of living decreasing —here a little, and there a little. Thus, the longer the strike lasts, the less justification will there be for a demand for increased wages—for that is what the men's claims, in the last analysis, amount to." In the present dull and depressed state of the paper market in nearly all lines there is little use in going through the various lines *seriatim* this week, as the statements that prices remain unaltered and that business is light and uncertain apply to practically all lines. An exception is to be found in the case of toilets and tissues, the business in which continues to be pretty good. There is a fair amount of business in the rag and paper stock market, with roofing rags continuing in some demand. There is some business doing in box board as boxmakers are showing a tendency to absorb somewhat larger supplies. Wrapping papers, too, are exhibiting some movement. But, even in those lines in which there is least inactivity, business all round is much too light.

NEW YORK MARKETS.

New York, July 2—(Special Correspondence)—Some branches of the paper market are evincing moderate activity. This applies particularly to the tissue paper, newsprint and box board divisions of the trade, these grades being sought by buyers in fairly large volume in comparison with other kinds of paper. The market in its entirety in the States is in far from normal condition. Consumers in common are still confining their purchasing operations to supplies actually and directly needed, and few if any of them are considering forward requirements when placing orders with jobbers or mills. There is a distinct tendency to limit buying to immediate wants, with the obvious result that aggregate demand involves far less than usual amounts of paper for the reason that consuming industries are experiencing quietness and therefore are not at present in need of customary amounts of paper.

At the same time, as stated above, newsprint, tissue papers and boards are moving in relatively good volume, and indications point to a gradual, though steady, improvement in business in these lines. Fine tissues are sought in larger quantity than for some time, and coarse tissues are probably the most active item in the market, there being a very good call for towels, napkins and toilet papers. Prices on these are steady to firm, with No. 1 white tissue quoted at around 95 cents per ream by mills.

The box board situation is characterized by comparatively broad activity. The average box manufacturer in New York and in other large centres is working at no more than 60 to 70 per cent of capacity, but the fact remains that they are busier than in recent months and that they are absorbing proportionately larger tonnages of board than in some time. Board mills are far

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from being choked with orders, but it is generally admitted they are receiving numerous calls for board and that the present movement toward boxmaking plants is heavier than at any time thus far this year. Prices on plain chip board are steady at an average of $32.50 a ton f.o.b. mills and on filled news board at around $35. Now and then sales are recorded at slightly less, but manufacturers for the most part are holding out for these figures.

Trading in spot lots of newsprint is fair. This is but to be expected, as with many newsprint mills shut down during the past six to eight weeks because of the strike of operatives, publishers are obliged in frequent instances to look for paper in the open market. There has been no further change of note in newsprint quotations. Spot news in standard rolls is bringing around 5 cents a pound at mills, with the quotations heard ranging a quarter of a cent a pound on either side of this basis. The strike of mill workers appears to be about over. Several more mills have reopened this week, following the reaching of an agreement by manufacturers and strikers to arbitrate the wage question, and it is understood remaining mills will start up again next Monday or Tuesday. The International Paper Company has sent letters to its striking operatives indicating its intention to reopen its mills next Tuesday after the Fourth of July holiday. The men are invited to return on the basis of the company's proposal of May 24, which provides for an average cut in wages of 21 per cent. Other mills affected by the strike have placed the wage matter in the hands of an arbitration committee of seven, three appointed by each side and the seventh member being Judge Frank Irvine, of Ithaca, N.Y., former Public Service Commissioner, and have either resumed operation or plan to do so during the coming week.

The contract basis on newsprint of the International Paper Company, the Canadian Export Paper Company and other leading producers is now 4.75 cents a pound, or $95 per ton, f.o.b. mills, this price becoming effective yesterday as the basis fixed for deliveries over the third quarter of the year.

There is no change of importance in book papers. Demand is running at an even keel at considerable under normal volume, and mills are busying themselves chiefly with supplying contract customers. Wrappings are moving in routine fashion, with buying interest centred on No. 1 kraft, which is quoted at 6.50 to 7 cents per pound at mills. Fine papers are in slack demand. Jobbers are buying only to fill the printing trade. It is understood that a good many paper mills are planning to close down all of next week partly because of the business depression and partly to make repairs and take mid-year inventories.

GROUND WOOD.—Mechanical wood pulp holds fairly steady in price at around $30 per ton at grinding mills for prime spruce ground wood for prompt delivery. Demand is of limited proportions, however, and the market displays no new life worth mentioning, business being purely of routine character. That the strike at print paper and pulp mills has seriously affected ground wood can be seen in the Federal Trade Commission's report on the pulp industry for May, which shows that the production of ground wood in that month dropped to 97,963 net tons from 159,442 tons produced in April. Despite this sharp decline in output, mill stocks of ground wood increased slightly during May, amounting to 226,089 tons at the end of the month, compared with 217,308 tons at the beginning of May.

CHEMICAL PULP.—Consumers of chemical wood pulp are buying at present in slight amounts merely to cover quick requirements. Sales seldom involve other than a few carloads at a time, which buyers want delivered as early as possible, and there is an easy tone to quotations. Notwithstanding the marked decrease in ground wood production in May, there was an increase in chemical pulp output in that month, according to the Federal Trade Commission's report, which places chemical pulp production in May at 118,138 net tons, against 109,364 tons in the preceding month. Moreover mill stocks jumped from 56,984 tons at the outset of the month to 60,127 tons at the end of May.

No notable change in pulp quotations are reported, though most of the current transactions are at the low edge of quoted ranges, indicating that values are weak and that sellers are granting concessions to move stock. Imports through the port of New York this week included 1,000 bales from Hamburg, 1,290 bales from Wallvik.

RAGS.—The papermaking rag market has ruled exceedingly quiet during the past few days. There have been sales, of course, but individual transactions have mostly involved small quantities of rags and the total amount moved has been of negligible volume. Roofing paper manufacturers have noticeably let up in their buying, while writing, blotting and other paper mills have absorbed few sizable lots of stock.

Prices are easy and such fluctuations as have occurred have been in a downward direction. No. 1 roofing is available to mills at 80 to 85 cents per hundred pounds at shipping points and No. 2 roofing at

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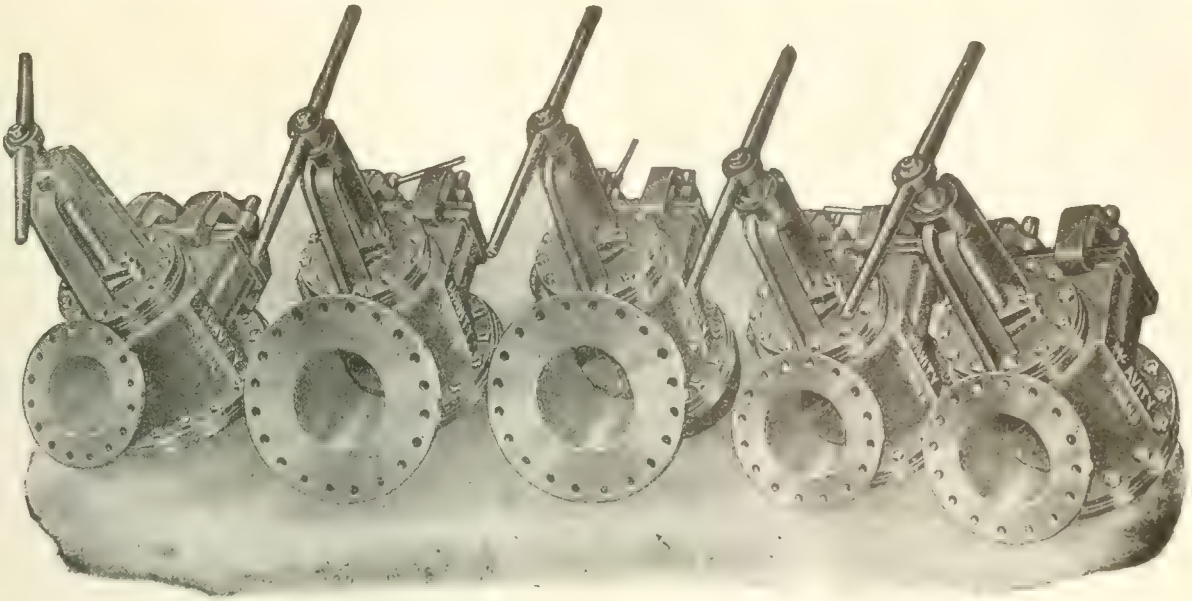

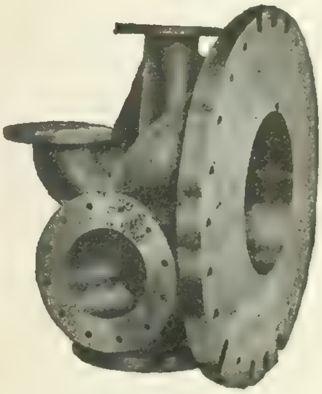

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A pattern equipment which is probably the most comprehensive in Canada for the needs of Sulphite Mills in Valves, Fittings and Specials, enables us to quote you rock bottom prices.

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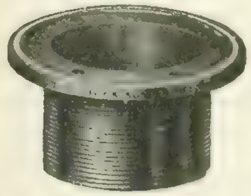

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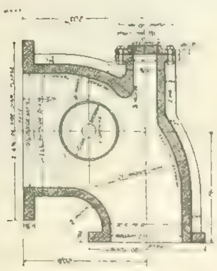

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75 cents. Old repacked thirds and blues have sold down to 1.65 cents a pound, and No. 1 old miscellaneous whites at 4 cents. New cuttings are obtainable at almost any prices within reason in some quarters, though a proportion of dealers are holding out for better prices.

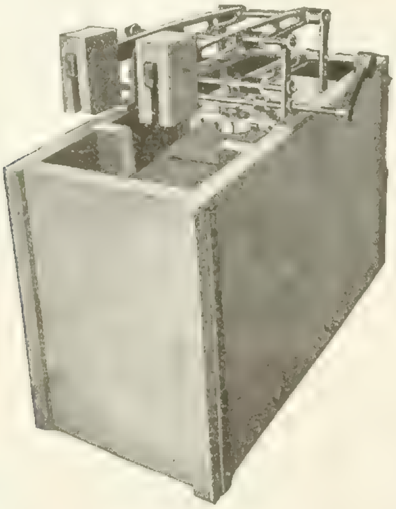
PAPER STOCK. There is a fair call for certain grades of old paper. Old kraft continues to lead in demand and is readily fetching 2 to 2.15 cents per pound New York for No. 1 packing, while No. 1 mixed paper is moving in comparatively good volume though 30 cents f.o.b. shipping points remains the mill buying basis. White news cuttings hold steady at around 1.60 cents a pound, and there is some movement of flat stock at around 90 cents a hundred for books and magazines. Soft white shavings are in moderate demand and dealers are insisting on at least 2.25 cents New York, with a majority asking nearer to 2.50 cents. Hard white shavings are quiet and can be purchased by mills at 3 cents for No. 1 grade, while folded newspapers are little wanted and are freely offered by packers at 37½ cents a hundred at shipping points.

OLD ROPE AND BAGGING.—Old Manila rope holds steady in price at an average of 4 cents per pound New York, and consumers appear to be absorbing fair-sized amounts. Bagging continues dull and is nominal in value.

WATEROUS MAKING FEENEY REGULATOR.

One of the most important operations in the manufacture of uniform paper is the proper regulation of the stock on to the machine. To accomplish this the Improved Feeney Stock Regulator has been placed on the market and is being manufactured in Canada by the Waterous Engine Works Co., Limited.

This Regulator, it is claimed, will keep the weight of the stock within 1 per cent at all times and can be installed in less than three hours without changing the existing line of piping.



The stock from the tanks enter a large compartment, the top of which is a large float connected directly with an overflow gate.

The gate through which the stock passes to the machine, is adjusted in such a way as to allow the current amount of stock to pass through.

Should the pressure in the tank increase above a certain pressure the float is raised and this automatically opens an overflow gate, at the same time partially closing the gate to the machine.

That this machine is well past the experimental stage is evidenced by the fact that there are over 600 now in use in the United States, many of these representing repeat orders.

FINANCIAL FIRM ADDS PAPER DEPARTMENTS.

The Investment House of H. L. Coombs Co., announces that they have added three new departments to their business, namely: Pulp and Paper Machinery Equipment, Pulp and Paper Products and also an Engineering and Contracting Department.

A special effort is now being made by several Canadian Manufacturers to supply Pulp and Paper Mills with Canadian made machinery, as it is felt that the more business that is placed with Canadian firms, the better it will be for business generally and for the employment of skilled labour.

John C. Corcoran, formerly of the Dominion Engineering Company, will be in charge of this department. Mr. Corcoran has had some thirty years experience in this line. His Assistant Mr. P. E. Buss, formerly of the Provincial Paper Mills knows the business and trade thoroughly.

The magnitude of the Pulp and Paper business in this country is growing by leaps and bounds, and to secure a part of the foreign business that is offered, this firm has secured the services of Robert Rolland, lately connected with the Export Department of Messrs. Grace & Company. Agency connections are being established in India, China, South America, Australia and Europe, and in addition to looking after this Foreign demand, the domestic business will be taken care of in all lines of Pulp and Paper Products.

Another department the Company intends making a specialty of is engineering and contracting.

Mr. L. N. Jenssen, who has had an experience in several parts of the world in Railroad Construction, Bridge Building and Concrete Work, will be in charge.

Mr. Jenssen is of the opinion that this is an age of Concrete, and that Bridges and other Constructions made of this material are much more serviceable and inexpensive than with any other material.

ALDEHYDE CONTENT OF ALCOHOL.

(Continued from page 719).

that Gota produces strong pulp. In Kramfors, where large quantitiees of strong pulp are made, the aldehyde content in the alcohol varies between 0.4 and 0.5 g. per 100 cc. In the manufacture of soft pulp about 0.36 g. is obtained. A considerable portion of aldehyde goes over in the first fractions, which may contain 3 to 3.8 per cent of aldehyde; these first fractions account for about 12 per cent of the total spirit. A portion of the aldehyde, about one-third, is lost in distillation.

The new power house at Twin Falls is now supplying current to the mills of the Abitibi Company at Iroquois Falls, Ont. Two of the four generators are running and produce 12,000 H.P. The first work for the new power is to run the three new paper machines, two of which are the largest in the world.

The Abitibi "newsprint quartette" turned out an average of 237.1 tons a day for the week ending June 19. This is at the rate of 729 lb. per inch of trimmed wire.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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J. NEWELL STEPHENSON, M.S., Editor.

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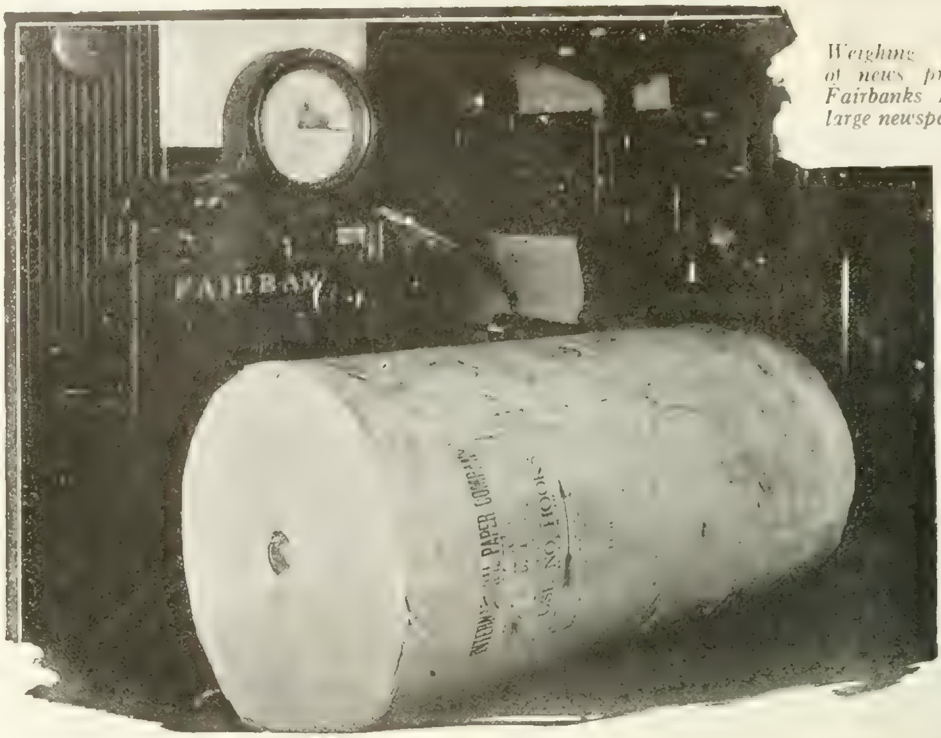

Weighing standard roll of news print paper on Fairbanks Dial Scales in large newspaper plant.

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EDITORIAL

AFTER THE HORSE IS STOLEN.

We have all heard about locking barn doors but most of us are prone to procrastinate until misfortune befalls us. Those who have studied the forestry situation have known right along that such a combination of weather conditions as we have experienced this spring and summer must inevitably result in enormous destruction to the forest. 1921 will be circled in red and bordered in black on the calender of years to many a company and many a family. Great improvements in fire protection have taken place since the last particularly disastrous forest fire but the experience of this summer shows that there remains a great deal to be done before the forest is made safe for the trees. Different districts require various treatment and present individual problems but there are certain fundamental facts that must be recognized and certain features of the problem that must be provided for. To do so requires more courage on the part of our legislators than they have so far exhibited and a better spirit of co-operation on the part of the public than has so far been in evidence. The first is a proper discharge of duties and obligations and the second is largely a matter of education and the administration of the law.

The lesson just written on the page of Canada's history is written in vain unless steps be taken to prevent absolutely a recurrence of such an experience. The variety of possible causes of fires makes the treatment of the subject a bit difficult but when it is positively known that certain precautions will at least do away with this or that possible cause we cannot see why under the sun such remedies are not demanded. In the State of Washington enormous areas suffered from a great wind storm last year and the dead trees that fell formed such a hazard that smoking in that area has been positively prohibited. There are similar areas—or there were—in Eastern Canada. Why was not a similar order observed here? There is a law prohibiting the burning of settlers' slash under hazardous circumstances. Why has this not been enforced and extended? It is required that privately owned railways take precautions with regard to sparks from locomotives which are not applied to the Government railways. Why not? River drivers, prospectors, fishermen, hunters and campers persist in leaving fires unextinguished, in throwing matches, cigar butts, cigarette stubs and pipe ashes into dead leaves, and lumbermen persist in leaving slash ready for a lightning bolt to start the conflagration. Why is this? The answer is because we are all blind fools, hoping against hope that past experience and misfortune will not come again but knowing full well that the fool must always pay for his folly. Canada has lost thousands of dollars and a number of lives in forest fires this year. This is an absolutely irrecoverable loss and there will continue to be such losses until we have the sense and the courage to remove each remevable cause as soon as a remedy for it is found.

JANUARY IS COMING.

There are several reminders just now that January is coming. One is the thought by comparison with the very hot weather we have just been having, another is the plea of the coal man to get ready for cold weather, and another is the fact that the Chairman of the Technical Section and the Chairman of the Committee on Program are already making plans for the annual meeting of the Canadian Pulp and Paper Association. No one, who has attended past meetings, will for a moment think of them as in any way unsuccessful or unsatisfactory but they can be made far more valuable to the members and to the industry in Canada if the membership will enter a little more heartily into the preparation of material for discussion.

The collective experience of many of the successful societies which have been holding enthusiastic meetings for many years is that the secret of a successful meeting is a general and thoughtful discussion of the subjects presented in the form of papers. Well considered discussion can come only by previous reading of the papers, with time to collect ideas and data on the subject. For the last few years, by dint of extremely hard work and last minute type setting and proof reading, the committee has been able to provide reprints of papers for distribution at the meetings. This has some advantage but it is far from being satisfactory. The committee is beginning its work for the annual meeting this early in the hope that better co-operation will be forthcoming from the members, making it possible to distribute copies of papers to members and others interested, at least two weeks before the annual meeting. This will require that papers to be read at the meeting shall be in the hands of the secretary not later than the 1st of January. Then by distributing a copy of each paper to each member the papers can be carefully read before the meeting and a great deal of valuable time conserved by the reading at the meeting of just an abstract of the paper as a guide to the discussion and a suggestion for comment. In a case where lantern slides have to be used the previous reading of the paper will be like reading a book before seeing the story in the movies. A great deal more interest will result because of the more intelligent following of the pictures and the explanation of them by the author.

In past years the program committee has had to rely on a few of the old standbys for papers. These men while always glad to exert themselves, often times at considerable inconvenience, for the benefit of the section, get a bit tired of being worked all the time. There are many members of the section who may have fully as much ability to prepare interesting papers as those who have been so generous with their time in the past. The committee cannot be intimately acquainted with the experience or the hobby of each member. It is certain, however, that many have had experience which would be very helpful indeed to the membership at large and would from the basis of a discussion which would not only be helpful to others but to those men also. A certain amount of modesty is a good thing but when the man is a member of an organization of the nature of the Technical Section he should be willing to make a little sacrifice fr the benefit of others, if for no other reason than to pay them back for the benefits he has derived. The member who is not willing to do so is in the class of the man at a prayer meeting where the discussion was about salvation and the fact that it is free. This old gentleman in giving his testimony said that he was glad to say that he had enjoyed salvation for 25 years and it had not cost him 25 cents. The minister, who had a sense of humor and ready wit remarked. ''May God bless his stingy soul.''

There is a point in this for members of our section. The benefits of the meeting and the service of the secretary, the committees and of the official organ, are at the command of every member. About 15 per cent of the members are holding office or serving on committees. They are giving thought and effort and time to this work week after week while there are other members who positively refuse to come across with so much as an opinion when called on at a meeting and cannot be induced, persuaded, stampeded or frightened into preparing a paper even on a subject regarding which they are known to have considerable experience and information. It is time for a few of these hard shells to loosen up a little and time for a few of the more modest members who perhaps because of their more recent membership, hesitate voluntarily to prepare a paper for the annual meeting, to come forward. The Program Committee purposely does not include technical discussions at the summer meeting so as to concentrate such efforts at the annual meeting.

There are many benefits derived by the men who prepare a paper. This is recognized by many colleges in the provision that a Thesis shall be written as a requirement for graduation. The reason is that by writing down his thoughts and conclusions, the man is forced to concentrate his attention upon the subject, it becomes more firmly fixed in his mind and in order to prepare a satisfactory paper or report he must reason the matter out carefully. His mind is thus trained, while at the same time it is being stored with information of value. In expressing his willingness to prepare a paper the man thus becomes known as one who is willing to accept responsibility and such men are greatly needed in these days. The publication of a paper read before an organization of the standing of the Technical Section adds to the author's reputation and may be the means of bringing to him opportunities for promotion. It also extends the circle of his friends and acquaintances and puts him on speaking terms, as it were, not only with the other members of the Technical Section, but with readers of the official organ as well, and a man who adds several thousand persons to those who know him is not doing himself a bad turn.

While making this plea for members of the section to offer to prepare something in the way of a paper, those who cannot possibly do so should at least be willing to read the papers carefully and discuss them, and if not present at the meeting to send the secretary their criticisms and suggestions on the subjects discussed. A couple of meetings carried out along such lines would so conclusively prove the advantage of proceeding in this manner that we are sure all succeeding meetings would bring forth such a volume of excellent papers that the plan of the council for carrying on through the year, an open Technical Section forum in the official organ, would be accomplished.

In conclusion we wish to urge as forcibly as cold ink will do it, that each member tell the secretary some little thing that he has been doing, some subject upon which he has obtained information by experiment or experience, and agree to write it up for the annual meeting. Furthermore, each member should consider himself as belonging to the Program Committee and to be on the lookout for material which others of his acquaintance might have that could profitably be brought before the section. This kind of co-operation and mutual service is the greatest possible factor in making the Technical Section the most successful organization of its kind. It was the first to be organized among English speaking paper makers and should always maintain its supremacy in the quality of its papers and discussions.

COBWEBS.

A friend calls our attention to a report in the Board of Trade Journal in London of a change in the Swiss Tariff, and adds: As a sign of the times you might be interested in knowing that the duty on paper underclothes has gone up from 40 francs per 100 kilos to 90 francs per 100 kilos. Five years ago any tariff that included such an item would have caused considerable amount of amusement.

Two features are not in this issue because a letter mailed in Toronto on Saturday had not arrived on Wednesday.

A reader of our Magazine, way out in Victoria, B.C. dispels our piscatorial ignorance thus: ''Oh, yes, fish can run. The salmon are **running** here now, and the packers are canning the **run.**''

Decay of Pulp Wood and its Effect in the Soda Process

By E. SUTERMEISTER.

The growing scarcity of pulp wood and its rapidly rising price are causing considerable uneasiness among those pulp and paper companies which are not so fortunately situated as to control holdings which perpetuate their supply. This conditions of affairs in its turn is causing more attention to be paid to the condition of the wood as received from the forests and to the problem of storing it under such conditions that it will not further deteriorate before use. In the past only a very few mills have paid much attention to this question and as a result, to quote from a progress report by the Forest Products Laboratory, "losses from decay in the wood pile at many mills are staggering, the amount of deterioration depending on the method of piling, age of the wood and sanitary condition of the yard."

That phase of the problem which relates to the kinds of fungi attacking wood, and more especially ground wood, has recently received much consideration in the technical press, but there is altogether too little available information regarding the proportion of commercial pulp wood which decays in the storage piles or how seriously such decay affects the yields and bleaching properties of the fibres prepared by the soda or sulphite processes. Any study which would show the percentage of rotten wood in a given pile, or as it was supplied to the digesters, would necessarily have to be carried out on a large scale and over a considerable period of time, in order to give information of any value. This would render the collection of such data a relatively expensive matter. The effect of decay on the yield of fibre, and upon its properties, is, however, comparatively simple to ascertain by means of small scale cooks and the following is a record of such investigations which were carried out to supply some of the desired data.

Poplar.

Quality of Wood.—Several grades of wood were used in this work, each being as nearly as possible representative of certain characteristic conditions. (1) Green wood was taken from an Aspen tree cut within two weeks of the time the cooks were made. (2) New sound wood was represented by a stick of peeled wood taken from a car which was being unloaded at the wood yard. This wood was not green, but there was no way of knowing just how long it had been cut. It is quite certain, however, that it was perfectly sound and that it had been stored in such a way as to avoid decay. (3) To represent sound wood from storage a stick was selected from a pile which had been in the yard three years. This sample was found to show evidence of incipient decay and the chips prepared from it appeared a little more brittle than usual. On the whole it was considered to be fairly sound wood, but to check the results obtained from it Sample 4 was selected. This was from the same pile but near the bottom where it had been kept under very wet conditions.

For comparison with these good samples two specimens of rotten wood were selected. Sample 5 was from a tree which had died and became punky while standing. It showed no external evidence of fungus growth but it was in such condition that it could be pushed over quite easily and although it was fully four inches in diameter it could be snapped in two very readily by striking it against another tree. The condition of this stick appeared to be very uniform throughout. Sample 6 was selected as being the rottenest specimen which could be found in the storage pile. It was not entirely uniform, as there were places where it was relatively sound, but these portions were avoided so far as possible when taking the samples for testing so the results are actually based on the rottenest grade of material.

Before starting any of the cooks the condition of the samples was studied by cutting rectangular blocks from representative portions of the sticks. These blocks were weighed as soon as cut and their dimensions measured as accurately as possible; they were then dried to constant weight and again measured. Drying caused more or less warping and checking so that the measurements could not be made with so much accuracy as with the wet blocks. For this reason the figures for volume bone dry, per cent shrinkage, and pounds per cubic foot of dry wood are subject to slight errors which, however, are not great enough to affect seriously the comparative results.

The results of these observations on the wood samples, together with values calculated from them, are given in the table below.

These figures show the variations which may be expected in the weight per 100 cu. ft. of sound wood from different logs and indicate clearly the loss in weight which is caused by decay without, at the same time, a corresponding diminution in volume.

Soda Cooks.—Soda cooks were next made on these different samples using a small rotary digester holding about two pounds of chips and heated by a gas flame. The moisture in the chips when they were charged into the digester was taken into account when calculating the strength of liquor to add so that the grams per litre of cooking liquor includes all water entering the digester either as caustic solution or as moisture in the chips. Each cook was brought to 110 lbs. steam pressure as quickly as possible, usually in about 40 to 50 minutes, and this pressure was maintained for five hours. The digester was then cooled rapidly, and the contents removed and washed at once. The following

Sample No.—	1	2	3	4	5	6
Weight of wet blocks in gms.	1,643·0	352·5	652·0	3,865·0	487·0	192·0
Weight of dry blocks in gms.	782·6	274·8	349·0	1,975·7	264·5	94·8
Per cent moisture in wood	52·3	22·0	46·5	48·9	45·7	50·6
Volume of wet blocks, cu. in.	126·5	47·6	57·7	318·8	63·8	24·4
Volume of dry blocks, cu. in.	118·4	42·6	53·0	295·8	60·7	21·0
Apparent shrinkage, per cent	6·4	10·5	8·2	7·2	4·9	14·0
Lbs. per cu. ft. of wet wood, wet weight	49·50	28·20	43·10	46·20	29·10	30·00
Lbs. per cu. ft. of wet wood, dry weight	23·57	22·00	23·03	23·60	15·80	14·80
Lbs. per cu. ft. of dry wood	25·20	24·58	25·15	25·48	16·60	17·20
Lbs. per cord of 100 cu. ft. wet wood	2,357	2,200	2,303	2,360	1,580	1,480

table shows the per cent of caustic soda added and consumed by the wood, both being based on the bone dry wood used; the strength of the cooking liquor in grams per litre of caustic soda; the yield of good fibre and screenings based on the bone dry wood used; and the per cent of bleach required by the air dry fibre. The bleach indicated is that which will give a color that is considered satisfactory for commercial soda fibre.

					Yield.		
Sample No.	Cook No.	Per cent NaOH added.	Per cent NaOH Consumed	Strength G.P.L.	Good fibre.	Screenings.	Bleach required per cent.
1	1	25	21·5	70	40·7	0·0	7·5
1	2	25	21·4	70	41·5	0·0	- -
2	1	25	21·8	70	41·7	0·0	8·2
2	2	25	21·8	70	41·4	0·0	—
3	1	25	21·9	70	38·6	0·0	14·0
3	2	25	21·9	70	38·5	0·0	—
4	1	25	21·3	70	45·3	0·0	8·0
4	2	25	20·8	70	43·6	0·0	—
5	1	30	25·6	70	31·4	0·0	15·0
6	1	25	23·3	70	—		—
6	2	25	23·6	56	29·8	5·7	Over 24

Considering these yields in connection with the weight per cord of 100 cu. ft. of solid wood the following figures are obtained:

Sample No.	Description.	Bone dry wgt. per 100 cu. ft.	Per cent yield good fibre.	Yield per cord, lbs. bone dry.
1	Green Aspen ·· ·· ··	2,357	41·10	968
2	Sound wood, from car ·· ·· ·· ·· ·· ··	2,200	41·55	914
3	Sound wood, from pile ···· ·· ·· ·· ··	2,303	38·55	888
4	Sound wood, from pile ·· ·· ·· ·· ··	2,360	44·45	1,049
5	Rotten wood, died standing ·· ·· ·· ··	1,580	31·40	496
6	Rotten wood from pile.	1,480	29.80	441

The yields from the various samples, when considered on the basis of a cord of 100 cu. ft. of solid wood, make an interesting study. The highest yield is given by sample 4 which has been stored under very wet conditions. It hardly seems possible that this could be responsible for the high yield and it is more likely that it is a peculiarity of this individual log. Samples 1 and 2, both of which were sound wood, give the next highest yields, while sample 3, which was only very slightly decayed, yields slightly less than the lowest yield from the sound wood. This appears to confirm the opinion that decay had started in this specimen for when it has proceeded as far as in samples 5 and 6 the yield is only about half that of sound wood.

Quality of Fibre.—Apart from differences in the amount of bleach required the fibres from the various samples of wood show differences which are probably characteristic of their physical condition. The unbleached fibre from samples 1, 2, and 4, all of which were sound wood, is of about the normal color for soda poplar. Sample 3, which was supposed to be sound, but which proved to be very slightly attacked by decay, gave a slightly darker fibre than the sound samples. Both samples of decayed wood produced dark fibre, the wood from the pile giving a much darker product than the other.

After bleaching the fibre from both lots of rotten wood is very hard and rattly when made into sheets and does not resemble a raw soda fibre so much as it does one which has been given a prolonged treatment in the beater. The other bleached samples are about normal although that from sample 3 might be considered slightly harder than the others. This is in line with the darker color of the unbleached fibre and the greater amount of bleach which it requires.

It was attempted to make pebble mill beating tests on the bleached fibre, just as is done with sulphite spruce, but the fibre from the rotten woods broke up so completely during the beating that no sheets could be made on the hand mould. The bleached fibre from the sound wood could be handled easily in this test and gave a bursting strength of 13 lbs. Ashcroft.

White Birch.

Wood Used.—The first sample was from a tree cut in April and used in the tests within two or three weeks. No. 2 was perfectly sound, No. 3 was an intermediate grade in which decay appeared very general but which was not so punky as No. 4 which was the rottenest grade available. Logs for samples 2, 3 and 4 were taken from a pile which had been in storage for three years. The bark was still intact when they were taken and the wood on the ends appeared dry and firm; in fact they were in such a condition that from a superficial examination they would have been rated as sound. On cutting them open they were found to vary from sound to very rotten, and while the decay did not extend uniformly throughout all parts of the sticks, it was general enough so that representative material could be obtained for the experiments.

As in the case of poplar a block of each grade of wood was cut to dimensions and weighed as soon as cut; it was then dried to constant weight at 105 deg. C. and again weighed and measured. The results of these shrinkage and moisture tests are as follows:

Sample No.	1	2	3	4
Weight of wet block in gms ·· ·· ·· ··	705·8	3,667	470	286
Weight of dry block in gms ·· ·· ·· ·· ··	352·8	2,120	289	188
Per cent moisture in wood ···· ·· ·· ··	50·0	42·2	39·5	34·3
Volume of wet block, cu. in. ·· ·· ·· ·· ··	37·81	229·8	37·81	37·81
Volume of dry block, cu. in. ·· ·· ·· ·· ··	37·34	223·2	36·09	35·19
Apparent shrinkage, per cent ·· ·· ·· ··	1·2	2·8	4·6	7·0
Lbs. per cu. ft. of wet wood, wet weight ·· ·· ·· ·· ··	71·13	60·80	47·37	28·81
Lbs. per cu. ft. of wet wood, dry weight ·· ·· ·· ·· ··	35·57	35·15	29·11	18·97
Lbs per cu. ft. of dry wood ·· ·· ·· ··	35·99	36·18	30·51	20·37
Lbs. per cord of 100 cu. ft. wet wood ·	3,557	3,515	2,911	1,897

These figures are remarkably concordant and show very plainly the increase in the shrinkage on drying and the decrease in the dry weight per cubic foot as decay proceeds.

Soda Cooks.—The wood was prepared for cooking by cutting the logs into discs and then chipping these by hand. This permitted a careful sorting and selection of the chips so that those used were of the same quality as the blocks which were weighed and measured.

The small scale soda cooks were made in the same apparatus and in the same way as with poplar. The following table gives the cooking data and the results of the cooks for birch wood:

		Per cent NaOH.			Yield of.		
Sample No.	Condition of Wood.	Added.	Consumed.	Strength G.P.L.	Good fibre.	Screenings.	Bleach required per cent.
1	Green	25	20·2	70	41·2	0·0	13·5
2	Sound	25	21·9	70	41·6	0·0	16·0
3	Partly rotten	25	22·8	70	35·6	3·5	Over 25
3	Partly rotten	25	22·7	70	36·1	0·8	20·5
4	Very rotten	25	25·0	70	10·4	20·5	Black with 25
4	Very rotten	30	28·6	70	17·4	6·9	Much over 25
4	Very rotten	35	28·9	70	13·8	0·9	Much over 25

Two other cooks of sound birch, made under the same conditions but carried out several years before, gave an average yield of 41·1 per cent of good fibre and 0·2 per cent of screenings, which agrees very well with the present results.

The figures in this table prove that the longer birch wood is stored and the more it is attacked by decay the greater is the amount of caustic soda which it consumes in cooking, the lower is the yield of fibre and the greater is the amount of bleach which the fibre requires to bring it to a standard color. In the case of the rottenest wood, which is an extreme condition, it cannot be reduced to fibre with much less than 35 per cent of caustic and the fibre is practically unbleachable, the color produced with 25 per cent of bleach being only a brownish yellow. The seriousness of the decrease in yield is even more marked if the figures are considered in connection with the weight per cord of 100 cu. ft. of solid wood. These may be tabulated as follows:

Sample. No.	Condition of Wood.	Bone dry wgt. per 100 cu. ft.	Per cent yield good fibre.	Yield per cord. lbs. bone dry.
1	Green	3,557	41·2	1,465
2	Sound	3,515	41·6	1,463
3	Partly rotten	2,911	35·9	1,046
4	Very rotten	1,897	13·8	262

Quality of Fibre.—The color of the unbleached fibre becomes darker as decay increases and there is a very marked difference between the fibre from sound wood and that from the rottenest sample. A study of the table of cooking data shows that this difference in color is doubtless due to substances which are very resistant to the action of bleach, so that it is practically impossible to bleach the fibre from the rottenest sample to a commercial color.

Microscopic examination shows that the fibres from the partly rotten wood are in fair condition though more of them are broken than in the case of sound wood. The fibre from the very rotten wood is quite different as it is much broken up and disintegrated into fragments of all sizes and shapes. Not all of it is broken up for there are some long fibres which appear to be in a normal condition, but in general it has the appearance of fibre which has been subjected to a very severe beating treatment. This probably offers an explanation of the hard and rattly nature of the sheets made from this fibre.

Pebble mill beating tests were made on the unbleached fibre from the sound and the partly decayed wood, the former giving a bursting strength of 45 lbs. and the latter 52·6 lbs. Ashcroft test. It proved impossible to make sheets of the beaten fibre from the very rotten wood for it broke up so much in the pebble mill that no satisfactory hand mould sheets could be made. It appears from these tests that the wood is so affected by decay that the fibre is more easily affected by beating than that from normal wood. Microscopic examination of the beaten fibres proves this to be true, as there is much more fragmentary material in the fibre from the partly rotten wood than in that from the sound wood, while the fibre from the rottenest wood is disintegrated to a very much greater extent.

Cook of Rotten with Sound Wood.

Up to this point all cooks had been made on digester charges which contained only one grade of wood for each cook, and while it was quite obvious that it was a waste of time and money to cook all rotten wood it was not proved how much harm a small amount of rotten wood would do when cooked in admixture with a much larger amount of sound material. In commercial cooking there is always an excess of caustic soda and it seemed possible that this excess might be great enough to take care of the extra requirements of the rotten wood and reduce it to a pulp which would not be very harmful. To investigate this point a cook was made upon a mixture of chips containing 85 per cent of sound wood and 15 per cent of the rottenest grade. The standard cooking conditions were employed for this cook, viz., 25 per cent of caustic soda, 110 lbs. steam pressure and a duration of 5 hours at full pressure. The yield obtained was 37·3 per cent of good fibre and 0·6 per cent of screenings, while from the results of previous cooks it was calculated that a yield of 37·4 per cent good fibre and 0·1 per cent of screenings was to be expected. The caustic consumption was predicted as 23·0 per cent and found to be 22·1 per cent.

The color of the stock from this cook was much darker than that from sound wood alone and slightly darker than that from the partly decayed wood. A good many dark brown shives were present; these closely resembled those present in the fibre from the partly rotten wood. Bleaching tests proved that this fibre could be bleached nearly to standard color with 23 per cent of bleach, but that the shives did not entirely disappear.

Relative Costs.

In order to get some idea of the increased cost of the fibre produced when rotten wood is used the following figures are assumed:

	Poplar.		Birch.	
	Sound.	10 p.c. rotten.	Sound.	15 p.c. rotten.
Wood per cord	$15·00	$15·00	$12·00	$12·00
Labor	5·18	5·18	5·18	5·18
Bleach (at 1.8c.)	1.31	1.38	3.74	5.08
Miscellaneous	15·78	15·78	15·78	15·78
	37.27	37.34	36.70	38.04
Yield of bleached fibre per cord, assuming 2 p.c. loss on bleaching	948	896	1,434	1,203
Cost per 2,000 lbs. bleached fibre	$78.58	$83.30	$51.20	$63.24

While these figures do not represent actual mill costs they are sufficiently accurate to show the increased cost when rotten wood is used, and they indicate that each per cent of rotten wood entering the digester will increase the cost per ton by 45 to 80 cents. This is based on materials and labor only, and if fixed charges and the loss in producing capacity of the plant were taken into consideration the difference in favor of sound wood would be still more pronounced.

Summary.

Decay in pulp wood decreases the weight per cubic foot out of all proportion to the shrinkage in volume.

Decayed wood gives a much lower yield of pulp by the soda process than does sound wood.

The fibre from decayed wood is difficult or impossible to bleach to a satisfactory color.

Decay so affects the fibres that they disintegrate very rapidly when beaten.

The cost of fibre is increased by about 45 to 80 cents per ton by each per cent of thoroughly rotten wood entering the digester.

FORTY-FIRST EDITION OF FRENCH DIRECTORY.

The forty-first annual edition of Annuaire de la Papeterie Universelle has been received by the Pulp and Paper Magazine and we wish to compliment the publishers, Messrs. L'Homme & Argy, of 9 Rue La Grange, Paris, for the very excellent contents and appearance of this helpful directory. There are 746 pages with the various sections printed on different colors and different grades of paper, which, at the same time represent a number of different styles of finish. It is really a very complete list of mills making pulp and paper throughout the world, together with the addresses of paper dealers and printers in Paris, agencies of mills elsewhere in France and much useful information with regard to the names and sizes of commonly used papers and boards in France, Trade customs, tariffs, etc. The advertisers are classified and indexed very carefully according to all kinds of materials and supplies for paper mills. The price of the volume is 20 francs and may be obtained from the publishers or from Marchant Singer and Company, 47 St. Mary Axe, London, or in Spain, from G. E. Julienne, 90 Calle Bailen, Barcelona.

PAPER CLUB LUNCHEON.

The Paper Club of Montreal got off to a good start on July 6th when they were entertained at luncheon at the Queen's Hotel as guests of the Canadian Pulp and Paper Association. In spite of hot weather and many absences from town, there was very fair attendance. Mr. H. F. E. Kent, chairman of the Book and Writing Paper Section of the Association. In commenting on conditions in the paper business, he said that we are in a very trying situation and labor conditions must be settled before there can be real progress. A serious case at present is the attitude of the striking printers, who, in effect, demand a 30 per cent. increase in wages. General business simply cant stand any such concession. It would mean that most job printing would be cut out and paper would pile up, putting two industries in bad shape.

Mr. Kent expressed the opinion that business would improve in the Fall.

President Reynolds of the Paper Club expressed the appreciation of that organization to the hosts and predicted a successful future for the club.

Others who were called on and made remarks abbreviated by the temperature were: Mr. I. H. Weldon, Provincial Paper Mills; J. N. Stephenson, Pulp and Paper Magazine; Harry Bell, E. B. Eddy Co., and Pierre Rolland, Rolland Paper Co.

ILL 10,248 DAYS.

Time lost by members of the Laurentide Mutual Benefit Association in the fiscal year of the organization ending on June 1 aggregated 10,248 days due to illness, according to the report of the secretary, A. G. Richardson. If this time were charged to one man it would keep him off the job for twenty-eight years and twenty-four days. Computing the average number of employees as 1800, if all were ill at the same time, the plant would have been closed for 5.69 days.

The Metropolitan Life Insurance Company, which carries the insurance, paid to employees for these reported periods of illness, the sum of $18,999.57. Previously this had been a total loss to the employees. There was also paid out in death claims the sum of $4200 in the first year, for two deaths among the members of the L.M.B.A. The percentage of deaths among each 100 men insured was .116 a remarkably low figure.

EXPERIMENTAL DIGESTER READY.

The experimental digester, work on which has been going on at Grand'Mere for several weeks past, is now ready for operation, and the first long cooks of pulp to temper the lead lining to the heat have been completed. These cooks averaged about sixteen hours.

The digester is one of the most complete installed in any paper mill. It has a capacity of half a ton of pulp, one-twentieth of the capacity of the large digesters, thus enabling experiments on a sufficiently large scale to be satisfactory in result. In connection with the digester, there is a complete weighing and measuring apparatus, for chips, acids and pulp. Mr. O. F. Bryant of the Research Department will have charge of most of the pulp experiments with the new digester. As soon as all the accompanying experimental apparatus is ready for operation, the cooks will take the same period as the larger digesters, about eight hours.

Our chief trouble at present is the "ex" in export.

Forestry in Sweden — Part 3

By EDWARD BECK, Publicity Dept., Canadian Pulp and Paper Association

Forest Fires Scarce In Scandinavia.

Stockholm, Sweden, June 15. Devastating forest fires, common in Canada, are unknown in Sweden. There are no vast stretches of burnt-over lands such as offend the eyes of the traveller along the north shores of Lake Superior and that represent the complete waste of untold millions of potential wealth. It was not always so. There are evidences that most of Sweden's forest areas have been burned over at some time in their history, and most of what has not been burned has been logged. Few virgin forests remain. Those that do are highly prized and well cared for. A visit to one of the best of these, under the guidance of Mr. Holgrem, a chief forest master of the Government service, near Fagelsjo in the Norrlands district, disclosed a fine stand of spruce and pine about three hundred years old, which was said to be one of the oldest and best in the country.

Swedish forests are not entirely immune to fire, but fire hazards and losses have been reduced to a minimum. A swedish forest authority estimates that the wood lost by fire does not exceed one-half of one per cent of the standing timber in any one year. In money value this has been calculated at $250,000 a year for the whole of Sweden, and in acreage to an average of from ten to twelve thousand acres in the public forests and at probably from thirty to forty thousand acres in those owned privately. In Canada the districts annually burnt over are usually calculated by the hundred square miles.

Most of the forest fires which occur in Sweden are attributed to sparks from locomotives, although, considering the way in which the railways abut on the forests, fires from this cause are surprisingly few in number. "Dry lightning," common in Western Canada and frequently a cause of forest fires, is unknown here. Climatic conditions also contribute to keeping down the number of fires. Promiscuous invasion of the woods by hunting, fishing and camping parties is not allowed and danger from the carelessly dropped match and the abandoned camp fire is eliminated. The laws for the protection of the forests against fires are very stringent and strictly enforced. There are no "Warning" signs tacked to the trees. They are said to be unnecessary. The people have long since been educated to a realization of the economic value of the forests to the life of Sweden. Every man, woman and child is a natural forest protector.

Many of the forests, especially those in Central and Southern Sweden, are traversed by good roads. In the State forests the roads are built and maintained by the State. In the private forests the owners are compelled to build and maintain these public roads which means to them a considerable expense. Small villages, usually consisting of a few families who divide their interest between cultivating small farms and working in the forests, are located at frequent intervals. The State and some of the private companies have colonization schemes and are inducing settlers to take up lots of land in the forests by providing them with houses, land, a small amount of capital and equipment on very generous terms, and allowing them to apply their labor in the forests to their indebtedness.

These agencies all combine to reduce the fire hazards. Incipient fires are quickly discovered. Help is nearly always readily at hand. The law requires that every citizen between 16 and 60 must respond to a call to fight a forest fire. The Swedish army is also subject to similar service when it is required of them.

Swedish forest experts who have visited Canada marvel at the tremendous losses sustained by Canadian forests through the agency of preventable fires. They incline to the opinion that adequate fire protective measures are more necessary in Canada than restrictions in cutting. They are willing to admit that many differences exist between the physical conditions in the two countries but they insist that Canada's forest fire losses could be greatly reduced by systematic effort and good laws properly enforced such as have been applied with such good effect in Sweden.

ASSOCIATIONS HAVE MUCH IN COMMON.

"Although I am speaking to you as the representative of the manufacturers of paper, I think we must all realize that there are three grand divisions of the paper industry, the manufacturing, the distributing and the printing industries, all important in themselves, but all interdependent."

This was the way in which W. J. Raybold, president of the American Paper and Pulp Association, discussed paper before the local organization of the United Typothetae of America at Baltimore, Tuesday night, June 28.

"These three grand divisions," he continued, "are represented by three great trade associations, of which we all have reason to be proud. The manufacturers are represented by the American Paper and Pulp Association, the merchants by the National Paper Trade Association, and the printers by the Typothetae.

"Inasmuch as we are all sections of one great industry, the paper and printing industry, one of America's most important business groups, I believe that our general policies should be so harmonized that we can work together, all at times, perhaps, making some sacrifices, but in the end achieving the greatest good of the greatest number of individuals in all of the branches.

"The trade association has an important function in American business. Through its work, the individual escapes the pitfalls in the path of the independent enterprise. One individual concern is subject to all manner of chances for failure to achieve success. The association, however, by getting the best judgment of groups of men, eliminates the chances of error, and helps save the individual from the errors which, unaided, he might so readily make.

"There is a certain amount of unselfishness among the members, required of those belonging to associations. They make individual sacrifices at times, for the common good, but the greater benefits derived from co-operation in the final event more than make up for the small sacrifices which may be made occasionally.

"And the same rule applies to the three grand divisions of this industry of ours. By co-operation, we will all in the long run be the gainers."

Now that they're going to publish a list of profiteers, [illegible] another paper [illegible]

Paper Box Makers Fine Meeting

An exceptionally successful and interesting meeting of the Canadian Box Manufacturers' Association was held at Hamilton, Ontario, June 23rd. The proceedings, which will interest the pulp and paper industry, will be published serially in the Pulp and Paper Magazine

PRESIDENT'S ADDRESS.

By C. T. REID (Messrs. Chas. Reid and Co.
Hamilton.

Another year's activities as an Association have ended and we have much to look back on, to warrant the assumption of our slogan "Advance". In some of the years of our existence as an Association there has not been apparent much need for any agency to inculcate optimism in our industry. We, in common with all industries, have passed through probably the greatest boom times industry, in general, will experience in the next century. For the greater part of that year just ended conditions have been vastly different, and we are really passing through the sort of times that justify, in greater measure than ever before, the existence, of strong trade organizations. All our work as an Association, so far, has been along educational lines. We are endeavoring to foster the pursuit of efficiency in our methods of carrying on business, and because our ideals have been high, the standards of the trade all over this country have been raised, beyond even the expectations of the persistent little band of paper box manufacturers whose breadth of vision and willingness for self-sacrifice half a dozen years ago, made our Association possible. I know that I express the thought of all who have had any official position in connection with our Association, when I say that we were singularly fortunate in being able to secure and retain S. J. Frame as our Secretary. All of the activities along the lines of standardization of cost systems, trade customs and the education of our members in the wide field of business ethics, has had to rest on the intelligence and industry reflected by our Secretary's Office and his hearty co-operation with your officers, at all times, has contributed to an extent difficult even to estimate, to the success of our organization.

As you are aware, our Association has been Incorporated, with a charter from the Dominion Government, and we believe this Incorporation will help us in our efforts to retain recognition as an important part of the industrial life of our country.

During the year past, conscientious work has been done by all the committees appointed to take care of special departments of our trade development. When you know that some of this work included travelling between Toronto and Montreal and London, on several occasions, at the personal expenses of the Committee members, and all of it done cheerfully for the good of the cause, you will realize that I would make no vain boast when I say that we have many members that would be a credit to any organization.

Within the month, I had the pleasure along with Mr. McDermid of London, Mr. Hampel of Brantford and Mr Hancock of Galt, of attending the Annual Convention of The National Paper Box Manufacturers' Association, in New York, and the recollection of the many courtesies extended to us as Canadians, makes it especially gratifying to me to-day to welcome so many of our American friends here.

I may be pardoned for using an extract from the address I made in New York, largely because I think our Toronto brethren have ready to hand every year, in their great exhibition, the means of making practical, some of my suggestions. I made the assertion that one of the greatest fields for advertising the paper box as a modern trade necessity, and the methods of its making as a pleasant means to a livelihood, as to be found among the trade expositions.

Those of you who are familiar with these shows have been impressed with the immense amount of interest evinced by the general public in any department of a fair, in which actual operations were shown as to the methods of manufacturing no matter how simple. You have all had the experience of the delighted interest of the casual visitor to your own plants, in the skill of your operators, and the ingeniousness of many of your machines. You will perhaps agree with me that the same interest could be aroused in thousands of people, at exhibitions all over this continent, if machine processes in our business were more generally shown. These exhibitions should be participated in by a number of paper box manufacturers and the work done should be regular stock, of a kind to be conveniently handled, made under a pooling arrangement if necessary, and possible of a lot of good, though free, advertising for the lines that the boxes were intended for. In the crowds that always surround these process exhibits, there are of necessity, hundreds of girls whose interest may at least be aroused to the point of considering the making of paper boxes as possibly as interesting and as profitable as the making of men's clothing, ladies' blouses, men's shirts and collars, or the knitting of underwear. Nothing makes so quickly for interest in any line as a little knowledge about it, and by the general encouragement in the trade, of active participation in process exhibitions, we can help to educate the public to a knowledge of the importance of our product, enable the would-be wage earner to know something at first hand about its manufacture, and last but not least, try, as an industry, to get a little of the limelight which in the past has gone in such large measure to the makers of the hundred and one lines of goods, which in the last analysis could not be marketed under present day conditions, without the paper box.

Now a few words regarding how to profit by this Convention.

First, through **Adaptation**; by attendance upon every session. It should be remembered that in the least suspected place, at the most unexpected time, intellectual stimulus may come. It is not always in the great address, but frequently in the discussion of some trite subject that a great idea blazes forth, or in some modest report that a great challenge issues.

Second, through **Application**: half-heartedness never yields results. Appliation to the theme of the Convention, careful studly of its reports, keeping the mind concentrated upon the subjects discussed yields fruitage where a wandering, listless mind loses capacity for securing power. We need the discipline of persistent application. In this connection, I wonder how many who were at last year's Convention profited by Mr. Bennett's statement when he said "May I be permitted to suggest caution in the growth of our Industry. Care should be taken in the purchase of new equipment. Be sure that the need exists. Would it not be well, perhaps, to make a careful survey of the equipment in use and an order at the present time and find out how much more we can produce as an industry than we are turning out at present. I am quite sure that if we had this information in front of us that we would find that there is plenty of capacity in the Canadian Paper Box Factories to take care of the increased demand for some time to come."

Third, through **Meditation**: we must think through and mull over the problems presented and not give mere passive acceptance to every andany proposal.

Fourth, through **Participation**: by entrance into the discussions; by relating successful experiences; by telling of failures; by careful questioning; by honest encouragement; by sympathy; by giving as well as receiving.

Fifth, through **Comradeship**: we should cultivate fellowship with the men who are giving themselves to a common work. A sense of fraternity, of mutual cooperation, of giving of time and thought to one another, should characterize relationships on the part of executives for and towards one another.

Note: The interesting addresses by Mr. C. N. Moissam, on "The Relation of the Office to the Factory"; by Mr. J. B. Laurason, on "Getting back to Normal"; and by Mr. B. Sprowle, on "Salesmanship," will follow in early issues of the Pulp and Paper Magazine.

HOW WOULD YOU DO IT ?

Can any of our readers do a fellow paper maker a good turn by giving any information on the following inquiry to the Editor?

"We intend to install here in the near future, a second-hand 10-plate screen to make a special grade of strawboard paper, and as the sheet to be turned out has to be practically free from lumps, we would be very glad to know if you could give us some information as to just how screens could be adjusted so that no lumps can get past through the plates. While the screen we are being offered is a second-hand one, it is in a very good condition. The plates used on same are quite opened, but we would like to use them over again as they are in good shape. We believe some of your readers who are paper manufacturers could give us some information on this."

PAPER MILLS INSTALLING MACHINERY.

It is encouraging to hear from the Engineering Machine Works of Canada that they have shipped 16 deckers 40 x 96 to the St. Maurice Lumber Co., and have three more on order. These machines are equipped with rubber couch rolls. Another item is the installation of a 4 pocket grinder. This company is planning to change 7-3 pocket grinders to the 4 pocket style.

This information is particularly welcome at the present time as it indicates a distinct revival of confidence. The engineering works are not only getting a larger number of enquiries, but actual business including boilers and lines not used in the paper industry, is keeping their shops operating almost a normal production.

Last week saw the start of the largest papermaking machine in the world at the plant of the Abitibi Company at Iroquois Falls. When running to capacity this machine will turn out a sheet 18 feet wide and 200 miles long every day, amounting to a daily output of 85 tons of newsprint per day

British Trade News

Paper Workers Ballot Against Reduced Wages.

(From Our London Correspondent.

London, June 27, 1921.—The Safe-Guarding Industries Bill, in which the British papermakers want to be included to safe-guard them against the debased rates of exchange existing in certain countries, is gradually creeping through Parliamentary circles. Mr. Asquith, the ex-premier, made a severe attack on the Bill the other day in the North of England and as a Free Trader he denounced it from all points. But the papermakers are still fighting on. They contend that paper should be included in the list of key industries and there is no earthly reason why it should not with its 53,000 workers and 262,000 allied workers depending on it. When the Bill goes to the Committee stage the manufacturers of paper will be able to state their case fully. The President of the Board of Trade has now announced that owing to certain conventions or engagements in force between the United Kingdom and the U. S. A., Belgium, Norway, Sweden, Japan and Italy — I am selecting only paper producing countries out of a long list — the tariff of 33 1/3 p.c. proposed in the Bill would not apply. Germany, Finland and Russia do not appear in the list so that the papermakers stand a chance, as things look at present, of having some provision included for their past protection against underselling imports. That is all they ask; they do not object to fair competition — but they object to be stabbed in the back.

The Workers' Ballot

The question of a reduction in wages, owing to the decline in the cost of living, has now received the attention of the paper workers. Recently there was a meeting between the employers and the workers when an agreement was arrived at, for a reduction of 4 cents an hour to take place now and when the cost fell another 15 points 3 cents more to be deducted, but a disagreement has arisen over a 3 cent reduction for a further fall of 15 points, the workers contending that the 3rd reduction should be only 2 cents an hour. A ballot has now been taken and a majority on a small scale has been obtained against the reduction. The Federation of Papermakers will now be up against a new element and the problem is: Will there be a strike? If a strike takes place the situation will become very serious, though it must be remembered at present many mills are closed or working short time. However, employers are not in a position or mood to be troubled with labour difficulties and no doubt the Federation will find some way out, though their proposals are strictly in accordance with the principle of a reduced figure based upon the drop in the cost of living. There is one thing against the workers and that is a full return of the workers voting for and against the reduction was not acceded to, the majority being a very small one for the Unions, and it is quite evident the economic position is understood by those who did not vote or else they were indifferent as to which way the ballot should go. We are now waiting to see which way the "cat will jump."

Is Labor Right In Fighting?

Some people will say: Why all this trouble over a cent between Labour and Capital? Well, the trouble is not on the workers side, it is with the agitators who are constantly telling the workers that they must always be after their pound of flesh no matter what it may cost. They are paid for preaching the wiles and ambitions of the workers over the questions concerning wages, and the [illegible] wages questions all interest is lost in Trade Unionism. Therefore, some opposition must be raised to a reduction. The leaders in the Unions knew that sooner or later a reduction would have to take place when the cost of living went down — as it most certainly has at present — and if they are right in accepting 3 cents for a 15 point drop in the second place, surely it is reasonable for an employer to ask the same in the third place, particularly when the rise in wages is taken into comparison with that of pre-war days. But no, the Unions will not be reasonable and with about 17,000 unemployed and nearly the same number working short time they propose taking up a fighting attitude with the employers whose proposals have received no less than 4,232 from the workers in the ballot — and it may be safely assumed that amongst those who did not vote there were a good many more supporters for the reductions. The mere mention of "Reduction in Wages" is like stirring up a hornets nest; it is something new and out of the ordinary.

The Paper Industry.

There is no improvement in business passing in the paper industry and manufacturers down to agents are still complaining of the prevailing dullness. Unfortunately the miners have not gone back to work in the coal mines and the situation is still serious. Indeed the papermaking industry has never had before such a blow, or was so badly affected as at present, by a general slump. Numerous mills are shut up till the miners condescend to return to work and capital and labor alike are suffering very keenly in the loss of money. If there is not a settlement very soon the outlook for the winter will not be rosy. Prices for paper are now easier and newsprint quotations are unchanged.

The Pulp Market.

The market for chemical pulps and groundwood is practically dead as regards new business and I am told that sellers are whiling away their time on the golf course or cooling their heads down at the sea-side. They have given up trying to do business under the present conditions and they are simply contented with looking after the current contracts and the incidental office work they entail. To predict anything about the future is out of the question just at the moment and millowners will not discuss pulp business in the chaos and troubles surrounding them. Some shipments are trickling through from Canada, but these are on account of running contracts.

Prices are about as follows:—Groundwood (wet) £5 a ton and dry £10; Bleached Sulphite, £30; Easy bleaching £26; sulphite (strong quality) £23; unbleached soda, £25; soda kraft, £22.

Scandinavian news states that the pulp market there is very quiet, with a tendency to lower prices. As I mentioned in the Pulp and Paper Magazine some weeks ago the strike has ended in Norway and since then the industrial situation has much improved, but the transport workers are still out on strike, thus slightly hampering shipping.

Oil Fuel.

The trials made with oil fuel have proved to be satisfactory. The fuel is the residue of the refined oils and when in the boiler is said to give great effects. One paper mill owner reports that he is well satisfied. After all there must be something in its favour as one of the best known English firms outside the paper industry has given up using coal and are converting the boilers over for oil fuel, in addition to buying up numerous storage tanks. It remains to be seen now if the price of oil fuel will go up like that of coal.

Chemicals and Other Materials.

The chemical market is very dull and prices are much easier in consequence.

Dyestuffs are not much changed in prices, but business is quiet.

China Clay is lifeless and there is no market for waste papers or rags.

Hand-Made Paper.

Between Government contracts and other sources the hand-made paper industry is enjoying nice trade and workers are kept pretty busy. The recent ballot of paper workers did not concern those in the hand-made industry so that one of England's oldest and historic crafts can sail along peacefully and independently.

PULPWOOD USED IN U.S. BROKE ALL RECORDS IN 1920.

Washington, D.C.—The pulpwood consumption of the United States in 1920, exceeded the greatest previous record, that of 1919, by 636,000 cords, or nearly 12 per cent., according to a preliminary statement based on a canvass of all known pulpwood establishments in the country, 253 in number, conducted by the Forest Service of the United States Department of Agriculture, in co-operation with the Bureau of the Census, United States Department of Commerce, and the American Paper and Pulp Association. Tabulated statement of pulpwood consumption and costs for the past four years follows:

Pulpwood Consumption.

Year	Number Establishments	Cords Consumed	Cost of Wood	Average Cost Per Cord
1920 . . .	253	6,114,072	$116,495,720	$19.03
1919 . . .	258	5,477,832	87,286,083	15.93
1918 . . .	250	5,250,794	73,167,118	13.93
1917 . . .	246	5,480,075	60,815,057	11.10

The sum paid for pulpwood last year exceeds by $29,000,000 the amount paid in 1919, and is $43,000,000 in excess of the 1918 expenditure. The average cost of pulpwood in 1920 exceeds the 1919 price by 19 per cent., and the 1918 price by 37 per cent.

The records indicate that at least 18 per cent. of the wood used was imported. Nearly 7 per cent. more domestic spruce was consumed than ever before, and the imports of this species are steadily increasing; so also are the imports of poplar, but the use of domestic poplar has fallen off 42 per cent. since 1916:

Pulpwood Production.

Year	Production Tons	Valuation Total	Valuation Per Ton	Cords Consumed Per Ton
1920 . . .	3,821,704	$275,941,213	$72.20	1.60
1918 . . .	3,313,861	174,570,645	52.68	1.58
1917 . . .	3,509,939	150,902,280	43.33	1.56

The 1920 production exceeds that of 1918 by 15 per cent. The sulphite pulp produced exceeded the mechanical in 1920 by less than 2,000 tons.

The ratio of imports to domestic production of wood pulp increased by nearly 6 per cent between 1918 and 1920.

The high prices paid for pulpwood and for labor in 1920 are strikingly reflected in the soaring valuation of pulp, which increased $19.52 per ton, or 37 per cent. in the last two years.

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD.

Exports of Canadian Produce—Months, of May 1920 *and* 1921; *and two months ending May,* 1919-21.

		Month of May		Two months ended May.		
		1920	1921	1919	1920	1921
Paper						
Book paper	Cwt.	4,311	1,364	4,958	7,119	7,678
	$	38,898	18,909	58,771	64,200	102,705
Newsprint paper	Cwt.	1,341,490	883,557	2,103,109	2,240,832	1,832,826
	$	5,935,556	4,682,393	7,356,717	9,763,097	9,924,286
Other paper	$	964,892	561,945	1,353,170	1,841,403	967,910
Total Paper	$	6,939,346	1,263,247	8,768,658	11,668,700	10,994,901
Wood Pulp—						
Sulphate (Kraft)	Cwt.	231,957	158,050	273,009	395,490	256,153
	$	1,000,862	664,085	870,786	1,621,590	1,088,515
Sulphite, bleached	Cwt.	160,056	88,369	158,248	291,217	129,080
	$	980,543	508,642	708,623	1,709,212	762,987
Sulphite, unbleached	Cwt.	482,725	187,398	465,450	880,084	286,142
	$	2,337,567	739,263	1,856,857	3,924,803	1,143,643
Mechanically prepared	Cwt.	279,439	326,299	417,071	478,103	390,369
	$	779,710	754,288	574,616	1,286,079	885,715
Total Wood Pulp	Cwt.	1,154,177	760,116	1,313,778	2,044,894	1,061,744
	$	5,098,682	2,666,278	4,010,882	8,541,684	3,880,860
Pulp Wood	Cord	76,648	54,914	131,032	117,081	127,931
	$	841,735	717,818	1,237,388	1,262,476	1,695,355
Country of Destination.						
Paper and Manufactures of						
To United Kingdom	$	306,696	86,602	384,454	651,213	125,869
United States	$	5,670,602	4,514,155	6,838,730	9,401,284	9,466,346
Other Countries	$	962,048	662,490	1,545,474	1,616,203	1,402,686
Wood Pulp—						
To United Kingdom	$	196,656	697,081	531,426	711,224	698,521
United States	$	4,617,033	1,752,844	2,639,3550	7,123,858	2,828,262
Other Countries	$	284,993	216,353	840,106	706,602	354,077
Pulp Wood—						
To United States	$	841,735	717,818	1,237,388	1,262,476	1,695,355
Total Paper, Wood Pulp and Pulp Wood—						
To United Kingdom	$	503,352	783,683	915,880	1,362,437	824,390
United States	$	11,129,370	6,984,817	10,715,408	17,787,618	13,989,963
Other Countries	$	1,247,041	878,843	2,385,580	2,322,805	1,756,763
Totals	$	12,879,763	8,647,343	14,016,928	21,472,860	16,571,116

FOREIGN CHEMISTS COMING FOR EXPOSITION.

That European Chemical industries are intensely interested in the forthcoming Chemical Exposition in New York was ascertained by Worth Colwell, who returned from Europe this week. Mr. Colwell is one of the exposition's publicity battery and with a member of his staff visited England, France and Switzerland. In London after presenting the various phases of the exposition to Dr. J. P. Longstaff and Sir William Pope of the Society of Chemical Industry, assurances were given that the British chemical experts will be well represented at the American exposition when it opens the week of September 12th, in the Eighth Coast Artillery Armory — the largest building of its kind in the country. The Society is holding its annual meeting in Canada the last week in August.

In France, leading chemists stated that they intend to make the trans-Atlantic trip for the event and in Switzerland a number of experts are especially interested in the development of chemical machinery in the United States. The future of the Dye Industry is a topic much discussed abroad and also the fuel problem. The French are particularly interested in the latter, the exposition's representative ascertained, largely because gasoline is costly there and the matter of securing substitutes for gasoline or 'essence' is of vital importance. While the development of gasoline substitute in the United States is largely neglected the foreign chemists are forging ahead. The use of benzol in combination with alcohol is becoming more extensive abroad and, as is well known, practically all of the substitutes for gasoline are dependent upon alcohol.

You, see, we must keep out cheap foreign goods lest the foreigners make enough money to buy our surplus farm products.—Baltimore Sun.

Technical Section

REVIEW OF RECENT LITERATRE.

A-1; E-0. Digestion of Woody Fibers with Chlorine. P. WAENTIG and W. GIERISCH. **Text. Forshchung,** ii, 69-79 (1920); **Chem. Zentr.** xci, 4, 544 (1920); **J. Soc. Chem. Ind.,** xxxix, 817A (Dec. 31, 1920). For the production of cellulose from wood shavings of 0.2-0.3 Mm. thickness the authors recommend a preliminary boiling with 0.1 percent sodium hydroxide for one hour, then treatment with chlorine for several hours without heating, and after the removal of hydrochloric acid a final treatment in 1 percent sodium hydroxide solution at the ordinary temperature with stirring. Thick shavings and chips may be digested with chlorine under six atmosphere pressure. A preliminary heating with 1 per cent alkali is necessary in the treatment of cereal straws. The chlorine process is not suitable for the production of textile fibers from jute and rushes, but it might be applicable to hemp, flax, ramie and nettles.—A. P.-C.

A-3.Studies on Bast Fibers. II. Cellulose in bast fibers. Yoshisuke Uyeda,, **J. Ind. & Eng. Chem.,** xiii, 141-3 (Feb. 1921). The estimation of cellulose in bast fibers (of Korean hemp) was made by three methods, viz., Renker's modification of Cross and Bevan's metod, the original Cross and Bevan method, and Johnsen and Hovey's method. The chemical behavior of the cellulose obtained is studied from the standpoint of cellulose chemistry, and Renker's modification of Cross and Bevan's method is suggested as the most practical method for the estimation of cellulose in bast fibers from the textile chemistry point of view. The function of pectin substance in bast fibers is discussed. It is suggested that the cellulose of the hemp fiber has, in some degree, an oxy-cellulose structure.—A. P.-C.

A-7. American Sulphur Industry. RAYMOND F. BACON and HAROLD S. DAVIS. **Chem. Met. Eng.,** xxiv, 65-72 (Jan. 12, 1921). The present status of the industry is reviewed with special reference to recent operations in Texas. The advantages of sulphur over pyrites as a source of SO_2 are discussed, and the effect of traces of petroleum and the properties and uses of sulphur, with particular emphasis on its usefulness as an engineering materal, are described.—A. P.-C.

A-14. Measurement of the Opacity and Translucency of Paper. RAYMOND FOURNIER. **Papier,** xxiii, 257-9 (Nov. 1920); **Paper,** xxvii, 23 (Feb. 9, 1921). Translation by A. Papineau-Couture.—A. P.-C.

H-4. Hypochlorites for Bleaching Paper Pulp. RAPHAEL SANSONE. **Rev. Univ. Papeterie,** iii, 13-4 (July 1920; 16-8 (August 1920); 13-6 (Sept. 1920); 15-7 (Nov. 1920); **16-8** (Dec. 1920). Description of various forms of equipment which may be used for the preparation of bleach liquors from bleaching powder and for the preparation of sodium hypochlorite bleach liquors.—A. P.-C.

A-11. Chemistry of Satin White. A. CONBENZL.. **Chemiker Zeitung,** 661-2 (Sept. 7, 1920); **Chem. Met. Eng.,** xxiv, 221-2 (Feb. 2, 1921). Satin white is a calcium aluminate mixed with hydrated calcium sulphate. It is of particular value in the manufacture of coated paper. The chemistry of the process of manufacture (interaction of milk of lime and aluminum sulphate) is discussed special emphasis being laid on the importance of the alkalinity of the aluminum sulphate used and of having the pigment in the proper state of colloidal dispersion to obtain good lakes. The author has devised the following process for the manufacture of satin white: about 90 Gm. of lime is slaked in 220 Cc. of boiling water; to this solution are quickly added 130 Gm. of finely pulverized (260-mesh sieve) aluminum sulphate of the proper degree of acidity; the mass is heated until it becomes almost solid, when 250 Cc. of water is added and the mixture agitated thoroughly. —A. P.-C.

A-14. Improved Glarimeter. L. R. INGERSOLL. **Paper,** xxvii, 23, 18 (Feb. 9, 1921). The glarimeter devised by the author some years ago (see **Electrical World,** lxiii, 645, Mar. 21, 1914) has been improved by replacing the optical system of the "glariscope" or polarimeter part of the original instrument by a modification of the so-called Pickering polarimeter (for mathematical treatment see **Proc. Am. Acad. Arts and Science,** ix, 1 (1873); xxi, 294 (1885). The instrument has been given a more convenient and compact form and several time-saving devices have been added. Some of the uses to which it may be put are briefly discussed. A. P.-C.

A-15; R-2. Advances in Cellulose Chemistry. EMIL HEUSER, **Cellulosechemie** for April 30, 1920; **Paper,** xxvii, 18 (Jan. 19, 1921); 19 (Jan. 12, 1921); 20 (Jan. 19, 1921). A review of contributions to the chemistry of cellulose from 1915 to the present day, including Freiberger on the determination of the "gum number" and the copper number of cotton cellulose. Hagglund on the determination of the copper number, Haller, J. H. Barnes and Heermann on the investigation of the action of mordants on cotton from the point of view of the adsorptive capacity of cellulose, Schwalbe and Becker on cellulose slimes, Noyes on the formation of formic acid esters, Ost on the formation of cellulose acetates, S. Leysieffer on the relation between the viscosity of cellulose nitrate solutions and certain other properties of the nitrates, Lenze and Pleus on the determination of the chemical constituents of nitrocellulose, Netthofel on the one hand and Heuser and Herzfelt on the other on hydrocellulose, Samec and Matula on cellulose dextrins, Madaen on "cellodextrin" and other degradation products of cellulose, Netthofel on the decomposition of cellulose to glucose, Denham and Woodhouse on the formation of cellulose esthers, and Pictet and Sarrasin on the distillation of cellulose under reduced pressure and its probable relation to laevolguecsan.—A. P.-C.

A-15; K-7. Cellulose Mucilage. JESSIE E. MINOR. **J. Ind. & Eng. Chem.,** xiii, 131-3 (Feb. 1921). A review and discussion of recent researches on cellulose chemistry with a view to developing teh following propositions: (1) The first step in the decomposition of cellulose forms a mucillaginous soluble dextrin which easily reduces Fehling's solution. These dextrins, as soon as formed, are adsorbed by pure cellulose, thus forming a reactive insoluble aggregate, called hydrocellulose. (2) Mucillage differs from hydrocellulose in the larger percent of soluble adsorbed dextrins present. (3) These adsorbed dextrins serve to catalyze the hydrolysis of cellulose. (4) Complete hydrolysis leaves only soluble dextrins. (5) Mucilage ,possibly through its colloidal nature, has a greater power of adsorbing water than has pure cellulose. (6) Cold water immersion causes a slow hydrolysis and weakers adsorption, so that mucilaginous products are destroyed as rapidly as formed. (7) With methyl red as indicator, it is possible to detect the increase in the alkalinity of the hydration of pulp. (8) Pulps with an original high coppe rnumber, owing to the large amount of catalyst present. (9) The copper number of bleached pulp can be increased by a careful acid treatment prior to beating. (10) Cellulose mucilage will spilt a salt and adsorb the metal ion more easily than pure cellulose, owing to the more colloidal state. (11) Moisture or acid treatment aids dyeing by forming mucilage. See also **Pulp and Paper**, xviii, 497 (May 6, 1920); 939-42 (Sept. 9, 1920); 1238 (Dec. 2, 1920).—A. P.-C.

B-9. Pulpwood Resources of Chile. World's Paper Trade Rev.; Paper, xxvii, 21, 29 (Jan. 26, 1921). Brief review of Chilean supplies of wood suitable for the manufacture of paper pulp, and of the advantages of starting a pulp industry in that country.—A. P.-C.

B-9. Wood Consumption and Forestry. HUGH P. BAKER, **Paper**, xxvii, 20 (Jan. 19, 1921). Sketch of the rate of consumption of American forests and of the great importance of the application of forestry to the maintaining of proper production of paper in the future.—A. P.-C.

B-9. The National Forestry Progress in the U. S. R. S. KELLOGG, **Paper**, xxvii, 21 (Jan. 26, 1921). A comprehensive analysis of the history of the program, and of the program itself.—A. P.-C.

D-4. Pulp Stones.—Making Paper. Paper, xxvii, 20 (Jan. 19, 1921). A brief description of the method of quarrying and finishing pulp stones for the manufacture of groundwood pulp.—A. P.-C.

H-6. Electrolytic Alkali and Chlorine Industry in Europe. JOHN B. C. KERSHAW. **Chem. Met. Eng.**, xxiv, 77-82 (Jan. 12, 1921); 119-22 (Jan. 19, 1921); 167-70 (Jan. 26, 1921). Outline of the development of the electrolytic alkali and chlorine industry in the United Kingdom, Germany, Austria, France, Italy, Switzerland, Russia and Belgium with a description of the various cells employed, including the Castner Kellner cell, and process, Solvay cell, Hargreaves-Bird cell and process, Gibbs cell and process, Griesheim Elektron cell, Billiter-Siemens cell, Aussig gravity cell, Billiter-Leykam cells, Kellner mercury cell, Outhenin-Chalandre cell, and the Basel type of cell.—A. P.-C.

K-11. Ventilation of Paper Machine Rooms. EDWARD A. RYAN, **J. Engineering Intitute of Canada; Paper**, xxvii, 21 (Jan. 26, 1921). A thorough discussion of the ventilation problem for paper machine rooms, together with a description of the methods at present in use.—A. P.-C.

K-11; M-7. Briner System of Vapor Absorption. E. A. BRINER. **J. Engineering Institute of Canada; Paper**, xxvii, 22 (Feb. 2, 1921). Discussion of paper on heating and ventilation of paper machine rooms by A. Ryan (see preceding abstract). From an engineering point of view some form of fan system for air supply and fan system of exhaust afford the most practical system for obtaining proper ventilation. A very large amount of heat is required to evaporate the water from the wet sheet of paper and to raise the temperature of the surrounding atmosphere sufficiently to enable it to carry off all this moisture without any condensation; but by proper recirculation the amount of heat required may be reduced approximately 50 percent. At the present practically all the heat which is drawn up through the exhaust fan is wasted. The Briner economizer is intended to recover a large amount of this heat by using it to preheat the air supply. In the Briner system of vapor absorption on paper machines the principal object is to supply a series of blasts of hot dry air to the sheet on the drying machine instead of against the cold roof. The importance of proper roof construction in preventing condensation is briefly dwelt on and the system of ventilation used at the Temiskaming plant of the Riordon Company is described.—A. P.-C.

K-18. Strawboard Manufacture. RICHARD CLAYTON, Paper, xxvii, 5 (Oct. 6, 1920); 8 (Oct. 27, 1920); 16 (Dec. 22, 1920). An account of the method of making straw board.—A. P.-C.

K-18. Board Mill Chemists' Problems. JOEL PFISTER, **Paper**, xxvii, 18 (Jan. 5, 1921). Brief description of some of the problems which a chemist in a board mill can help to solve.—A. P.-C.

K-18.—Quality of Paper Board. HARRY BERT, **Paper**, xxvii, 17 (Dec. 29, 1920). A discussion of the relation between the quality of paper board and the coal consumption and nature of the stock (mixed papers vs. fiber box cuttings and corrugated cuttings) —A. P.-C.

M-9. Conveyor for Shredded Pulp. Paper, xxvii, 21, 33 (Jan. 26, 1921). Brief description of the method of operation of the "Airveyor", showing its advantagesfor the conveying of any bulky material in which the pieces are small and which is not sticky and fragile. —A. P.-C.

O-3. Methods of Water Purification. WILLIAM MACKLIN TAYLOR. **Chem. Met. Eng.**, xxiv, 123-8 (Jan. 19, 1921). A thorough discussion of the respective merits and disadvantages of methods of water-softening by filtration through zeolites, by chemical precipitation and by rectification with boiler compounds, showing that each problem must be studied thoroughly in order to determine which method is best suited for obtaining the desired results.—A. P.-C.

R-2. U. S. Papermaking Patents for 1920. Paper, xxvii, 20 (Jan. 19, 1921), 21 (Jan. 26, 1921). A list of the patents granted by the U. S. Patents Office during 1920, arranged according to the classification of that office. Compiled by Clarence Jay West.—A. P.-C.

R-4. How to Stimulate Salesmen. Paper, xxvii, 21 34 (Jan. 26, 1921). A few suggestions for the stimulating of salesmen: sales convention, sales contests, sales quotas, sales bulletin, graphical analyses of territories, sales manuals, school of salesmen.—A. P.-C.

R-5. Paper Industry in Finland. JAMES E. CAMPBELL. **Paper**, xxvii, 17. (Dec. 29, 1920). An analysis of the prospects of development of the paper industry in Finland, showing the preat possibilities for standard grades of paper print, magazine, book .—A. P.-C.

R-6. Natural Organization. GEORGE A. GALLIVER, **Paper**, xxvii, 21 (Jan. 26, 1921). Various examples are taken from organized life to show that the law of progress in Nature is organization. The necessity of applying the same principles to the business world is pointed, taking as example the organization of the human body.—A. P.-C.

UNITED STATES NOTES

Former Postmaster General, A. S. Burleson, who has been in Germany investigating the possibilities of marketing American cotton, reports that Central Europe has become so accustomed to using paper substitutes for many textile articles that the task of getting back the market there for American cotton is an extremely difficult one while the German mark remains at its low and wildly fluctuating value. White paper table cloths and napkins have been in general use for nearly five years, and even the best hotels in Berlin no longer feel it necessary to provide linen or cotton cloths for their tables. Great rolls of heavy crinkled paper are kept in all restaurants and hotels. Waiters cut table lengths from these as required. The same system is resorted to in private houses. Germany has an abundance of paper and the price is low. Woven paper cloth has replaced cotton, woolen and silk fabrics almost entirely as upholstering and drapery material in car furnishings. Woven paper towels and tablecloths have been perfected which can even be washed two or three times.

According to Charles M. Wright, a leading Kalamazoo paper jobber, paper for use in American public schools and other educational institutions is likely to be far short of the needs this year. Mr. Wright quotes a manufacturer of papers suitable for school uses as saying that available stocks of such paper have been almost used up and very little of it is being produced at present. This means that there will be a lively scramble for what school stock is in sight with resultant high prices.

Plans for construction work on a new factory at Richmond, Va., for the recently formed R. A. Cauthorne Paper Company have been decided upon and, with actual building operations getting under way soon, it is expected that the plant can be opened for operations some time in October. J. H. Wallace & Co. of New York, have charge of the construction. The building will be of brick and concrete, and of the most modern design. The Cauthorne Company is capitalized at $750,000. It will manufacture blotting paper, book and envelopes. Carl Magnus, a graduate of the University of Maine paper course, will head the new factory.

A Beloit paper machine which, it is claimed, will prove to be the fastest in the world, has been installed in the mill of the Consolidated Water Power and Paper Company at Wisconsin Rapids, Wis. When first put in operation the monster machine ran at a speed of from 800 to 900 feet a minute. It is expected to have it running at a rate of a thousand feet a minute within six months and to have it going eventually at its capacity speed of 1,500 feet a minute. The machine's length is in excess of 300 feet and it uses 164 inch wires. It turns out a sheet of newsprint trimming at 156 inches. A year was required to build the monster, and its installation has been in progress for several weeks at the Consolidated plant.

J. M. Caine, president of Caine Brothers Paper Company, New York City, asserts that the paper industry is picking up, but that demand fluctuates so markedly that "everybody is kept on the jump" trying to figure out what to buy and when to buy it. Mr. Caine, who is in touch with jobbers, consumers and producers, regards stimulation of the export trade as one of the best means to eliminate the slump in the industry. "There seems to be a generally fair demand for our paper abroad," he says, "and with a little attention and consideration paid to terms and packing I see no reason why the export business in this line may not be built up steadily in the near future. Even if it does nothing much but increase the volume of business done, disregarding any profits on exports, it will have a beneficial effect in that it will tend to stabilize prices and demand." As to supply, Mr. Caine says that paper jobbers and brokers have no difficulty in filling all orders they receive.

The Federal Forest Service is preparing to open a new experiment station at Asheville, N.C., for the purpose of obtaining information bearing on the best methods of handling forest lands in the Southern mountains. Steady depletion of the Southern Appalachian timber supply is responsible for the location of this station. The general timber situation is exceedingly serious, official foresters say, three-fifths of the original timber stand has been destroyed or utilized and a considerable percentage of the remaining two-fifths is made up of inferior second growth. One-half of the timber left is in three Pacific Coast States—Washington, Oregon and California. The Appalachian Forest Experiment Station will deal with the problems of a forest area approximately equal to twice that of pre-war Germany.

Courses in pulp and paper manufacture under the direction of Prof. Ralph H. McKee, of its Department of Chemical Engineers are included in the prospectus of the twenty-second Summer session at Columbia University, New York. Instructors chosen to assist Prof. McKee, include Hugh P. Baker, Secretary of the American Paper and Pulp Association, Bjarne Johnsen, head of the research division of the Hammermill Paper Company; Sigmund Wang, chief chemist of the Riordon Company, Ltd.; J. A. Hayes, manager of the New York division of the Chatfield and Woods Co.; N. R. Hopkins, sales manager of the Oxford Paper Co., and Fred C. Clark, Director of the Department of Technical Control, American Writing Paper Company. The pupils will include two Vice-presidents of corporations, one mill manager and more than two score of industrial workers.

Wage reductions ranging from 13 to 30 per cent, and affecting about 3,000 men and women employed in Kalamazoo paper mills, were announced last week by paper company managements there. The cut went into effect last Monday, and is in addition to the pay decrease made several months ago when the post-war bonus was discontinued. The new scale for common labor in most of the Kalamazoo mills is 45 cents an hour. This in some instances is the same rate as was in effect May 1, 1919.

Numerous forest and brush fires in Northern and Central California, which caused damage estimated at more than $1,500,000, were reported extinguished last Saturday after most of them had burned for forty-eight hours.

News From Europe

Profiteers in Paper.

Under a display head, Paper Profiteers, the Frankfurter Zeitung says: One of the Hansa banks is offering shares in the newly erected paper and board mills of Upper Bavaria with a capital of 15 million marks. It is interesting that stockholders receive 60% dividends from business on the inland markets at current prices, and a further 30 per cent. on one-half of the foreign production is anticipated. The basis of these returns is the price of 280 marks per 100 kilos of paper, while the recent price of 400 marks per 100 kilos has yielded a "frozen reserve" of 9 million marks, equivalent to 60 per cent. of the capital. These figures are less expressive of the prospects of the Upper Bavarian paper and board mill than of the conscienceless and usurious level of present paper prices. Yet these new concerns assert that a "well-conducted and well-managed paper mill has reached profits up to 100 per cent." The natural result of these profiteering advertisements is a rapid drop in prices.—Tapeten-Zeitung, May, 1921.

High Speed Paper Machines.

It may be useful to reproduce here some of the European comment on American high speed machines. The Paper Trade Journal of Finland devotes a brief notice to the 1,000 feet a minute machine of the Sewall and Bagley Co. La Papeterie observes that this speed, even if it is obtained, is practically of short duration. In addition to the difficulties of building such a machine, the "service" must be extremely skillful. It is by no means easy to find attendants of this kind. Then the possibility of breaking the sheet plays an important part,—an accident which, obviously, must be remedied without delay. It seems hardly necessary to say that the conclusions of the writer in La Papeterie will not be new to American makers of machines. For example he says (1) the speed of the pulp on the wire must at least be equal to the speed of the machine; (2) the number of press rolls, the length of the wire and the number of suction boxes must be sufficiently great to effect a thorough hydroextraction, in order to avoid uneven pressure of the paper under the first press rolls; (3) the rolls, drying cylinders, etc., must fit adequately (!); and (4) the drying cylinders must be provided with a system of hydroextractors.

All this, remarks a writer in the Papier-Zeitung, is not very original or helpful. The writer adds that reports from America state that the high speed is attained partly by the use of ball bearings. A correspondent is more explicit (Papier-Zeitung, May 12, 1921): "The most important point," according to this writer, "is not understood by La Papeterie. This is the electrical drive (intersectional drive). The drive of the paper machine is divided into parts, for example, wet end, press rolls, etc., each group having a special electrical drive."

A German Salesman in the United States.

Writing to the Tapeten-Zeitung in regard to the sale of paper, particularly wall paper, in the United States a correspondent says: In Europe we scarcely realize the importance of "window dressing," of display. In Chicago the large shops frequently change the decoration of their windows every other day, and "Saturday window dressing" is universal. In the case of wall papers the designs, coloring and ultra-modern effects are nearly always English, French, and Belgium; German rolls being conspicuous by their absence. The fault, as the correspondent frankly states, is the German habit of misunderstanding American trade conditions. Thus the books of paper samples were not sufficiently modern, as the new samples had not been issued in book form so that they could be exhibited in the United States. Moreover German paper makers had not yet got a clear-cut idea of the immense size of American business. Nevertheless the outlook for German paper products in the United States is at present favorable.—Tapeten-Zeitung, May 15, 1921.

(The paper trade might do some "window dressing" with profit).

Est-il Quelqu'un?

A writer in La Papeterie, who calls himself Jean Bart and who, like Voltaire and Moliere, has another name, is very quizzical about the Swedish Cellulose Association. His remarks are worth notice, because clearly anyone with two names must surely be somebody, This Scandinavian Association he says, is "disloyal and illegal." What is worse it is probably a violation of the "penal code." He is not quite sure, but there is no doubt that there are "false brothers" among its members, and that the "dominant note in Scandinavian mentality is to act the Artful Dodger." (Jouer la partie du plus malin). The label on the whole concern, he concludes, is "combine" and its aim is to maintain prices and "la Vie chere". In this design the Swedes have formed a coalition "from which no sharp practice is excluded."

It seems worth while to give a faithful summary of such vehement language. It is certainly an odd paradox that men of business cannot combine in their own interests. M. Jean Bart is amusing, but he puts one in mind of a famous essay. Hazlitt divides amassers of fortunes into two opposite classes; lean, penurious-looking mortals, or jolly fellows who are determined to get possession of the good things of the world because they want to enjoy them. The latter he tells us, "eat, drink, and sleep their way into the good things of this life. For instance the greatest number of "warm" men in the Street are good, jolly fellows, who are larded with jobs and contracts, stuffed and swelled out with layers of bank-notes and invitations to dinner. (Especially the latter!).

The particular type of association described by Hazlitt is for the moment "démodé," or, rather, as M. Jean Bart says, it does not exist in France. But would not anyone, who did not know the facts from the newspapers, say that it did?—La Papeterie, May 10, 1921.

Paper Fibers of Brazil.

One of the most recent books on textile fibers and cellulose is the work of a Brazilian, Dr. Pio Correa. It is published by the Minister of Agriculture, and it is certainly surprising to read that one of its objects is to furnish the exhausted European nations with wood and to guard against the "destruction of trees". The author remarks that it is difficult to "count" the modern works on this theme. All the same the destruction of trees outpaces Nature. He sees a tree-less age ahead, and among fibrous materials that deserve careful trial are Hibiscus tiliaceus, Typha dominbenois, Hedychium coronarium, Cecropia, a few of which are now in practical use in Brazil. There are also handsome monographs on jute, canapa, the agave.—INDUSTRIA della CARTA, May 1921.

We have heard of fresh water sailors, but Admiral Sims seems to be the original hot water sailor

Members of The Technical Section, C. P. & P. A. at the Cascade Inn, Shawinigan Falls.

GENERAL CHEMICALS.

Current Wholesale Prices in New York Market.
Week of July 6th, 1921.

		Carlots	Less Carlots
ACID, Acetic, 56% ..	100 lbs	4.00 - 4.25	4.50 - 5.50
" Glacial, 99½ % carboys	100 lbs.	9.75 -10.00	10.25 -10.50
" Hydrochloric ..	100 lbs.	1.50 - 1.65	1.75 - 2.00
" Sulphuric, 66 deg. drums	ton	21.00 -22.00	22.50 -23.00
ALCOHOL, Ethyl	gal.	.... -	4.90 - 5.05
" denatured, 188 proof	gal.	.... -	.31 - .36
ALUMINUM Sulphate, commercial	lb.	.01¾ - .02	.02 - .02½
" iron free	lb.	.02½ - .02¾	.03 - .03½
Ammonium Chloride, granular white salammoniac, normal)	lb.	06½ - .06¾	.07 - .07½
" (gray salammoniac)	lb.	.07½ - .08	.08 - .08½
BARIUM Sulphate (prec.) (blanc fixe)	lb.	.04½ - .05	.05½ - .06
BLEACHING POWDER (Calc. Hypochlorite).	100 lbs.	2.15 2.25	2.35 - 2.50
CHLORINE, gas, liquid cylinders (100 lb.) ..	lb.	.08 - .09	.09½ - .10
GLYCERINE, C. P., drums extra	lb.	.... -	.16 - .16½
LEAD nitrate	lb.	.... -	.15 - .20
LITHARGE	lb.	.08¼ - .08½	.08¾ - .09
METHANOL, 95% (Methyl Alc.	gal.	... -	77 - 80
POTASSIUM Bichromate	lb.	.17½ - 12	.12¼ - .1.
" Hydroxide (Caustic potash)	lb.	.05 - .05¼	.05½ - .06
" Prussiate, yellow ..	lb.	.24½ - .25	.25½ - .26
SALT cake	ton	.... -	27.00 -30.00
SODA ASH, light ..	100 lbs.	2.15 - 2.20	2.30 - 2.70
" " dense ..	100 lbs.	2.40 - 2.45	2.50 - 2.75
SODIUM BORATE (Borax)	lb.	.06 - .06¼	.06½ - .07
SODIUM CARBONATE (Sal Soda)	100 lbs.	1.90 - 2.00	2.10 - 2.40
SODIUM HYDROXIDE (Caustic Soda)	100 lbs.	4.15 - 4.25	4.30 - 4.80
SODIUM PRUSSIATE, yellow	lb.	.12½ - .12¾	.13 - .13½
SULPHUR, Crude	ton	20.00 -22.00	.... - ....
SULPHUR Dioxide, liquid (cylinders extra)	lb.	.08 - .08½	.09 - .10
ZINC Oxide, XX	lb.	.09 - .09¼	.09½ - .10

In the New York chemical market, no outstanding event of interest for the past week is reported. Opinion is expressed by many that soda ash prices should be revised downward. Chicago reports a well-defined improvement in last fortnight. Caustic soda is still firm; also soda ash.

NEW OXYGEN PLANT, AUGURS INDUSTRIAL IMPROVEMENT.

In these days of general industrial depression it is refreshing to note the spirit of optimism evidenced in the announcement recently authorized, that the Dominion Ogygen Company, Limited, will break ground in mid-July for a new quarter-of-a-million-dollar oxygen present capacity. The building will be 100 ft. by 100 plant at Montreal, which will double the company's ft. and will be substantially a duplicate of the company's Toronto plant, which until now has supplied oxygen to Canadian industrial users through five district distributing stations. The Montreal plant will be the second of five producing plants projected at the time the company was organized last year.

They are now producing stainless steel. In time we may have the stainless steel trust.

FRENCH MILLS IN SERIOUS SITUATION.

Mr. Thorsten Lundgren, of Stockholm, who is a director of the Swedish Association of Chemical Pulp Manufacturers and also of the Swedish Association of Groundwood Pulp Manufacturers, has been sent to France to study the conditions in the paper industry and to try to arrive at an amicable settlement with the French Association (Syndicat des Fabricants de Papier et Carton de France). He has already created a very favorable impression among the French paper makers.

In the course of a visit to the French journal "*La Papeterie*", he stated how strongly he had been impressed by the critical condition of the French paper industry.

"I have just landed after a month's stay in England, where I have seen that the paper makers are facing a very difficult situation; but my countrymen, who themselves have serious difficulties to handle, could not form an accurate idea of the state of affairs in your industry, and they certainly could not imagine that its situation could have become so critical. It is absolutely necessary that something should be done to help it out of its present crisis, and in reporting my findings to Sweden I shall advise that the demands of the French paper makers be complied with as far as possible."

These demands, as formulated by the "Syndicat", are as follows:

1.) A reduction in contract prices, which should be of at least 30 per cent for quantities to be delivered in 1921; while for 1922 and 1923 deliveries the price should not be more than 15 per cent above the market price at the time of delivery.

2.) The buyer (only) shall have the option of extending the time of delivery, for 50 per cent of the quantities contracted for, over a period which may extend up to the opening of navigation in 1923.

3.) The buyer (only) shall have the option of paying 50 per cent of the contract price (as agreed according to paragraph 1 above) at the time of delivery, for the 1921 deliveries, the balance being paid at the time of the deliveries extended to 1922 and eventually to 1923.

4.) The buyer (only) shall have the right to annul all or part of the deliveries; but shall have to pay an indemnity to be agreed upon.

5.) The buyer shall have the option of making a new contract with the vendor for future deliveries, the conditions of which will permit of an advantageous distribution of payments with those of the present contract after reduction of the latter in accordance with paragraph 1 above.

The "Syndicat" concludes by saying that the above are the minimum concessions which are considered necessary to the French firms which are hit the lightest by the present onerous contracts. The members need not be bound by the above in their private negotiations with the vendors, but reserve themselves the right to demand greater concessions depending on their individual situations and on the conditions of their respective contracts.

Such is the general trend of the French demands, which involve about 30,000 tons, while the English contracts involve about 200,000 tons.

"I understand quite readily, said Mr. Lundgren, that the present condition of the paper market requires that the concessions to the French paper makers be made as generous as possible as regards reduction in prices and terms of payment. But on the other hand the situation of our pulp manufacturers must also be considered. On the strength of their contracts, the Scandinavian banks made advances to them, which enabled them to buy wood, coal, and the other raw materials which they required to fulfill their contracts. The banks are now refusing to extend the credits or to advance more funds on these same contracts on which the pulp makers depended to refund the loans.

We must therefore find an amicable settlement which will protect the interests of both parties, and I have not the least doubt that with a little good will this can easily be done."—A. P.-C.

(La Papeterie, June 10, 1921.)

HOW RAW MATERIALS MINGLE IN PAPER MAKING.[*]

I remember how pleased I was when first I realised that nature was imitated by the paper-maker in such a simple operation as paper sizing and the analogies I was able to draw. For instance, resin is the residual product of the distillation of tree sap, and sap protects the wood from rain; therefore a tree robbed of its sap is deprived of its water resisting property. Now, in preparing wood for papermaking the resins are eliminated, and the paper made from such wood pulp would be water leaf and non-ink-resisting, but the paper maker imitates nature by putting resin back again with the wood fibres in the beating engine. And, again, a buffalo hide and a rabbit skin keep the occupant dry during its lifetime, and when dead the skin may be used as a covering for paper, *vide* gelatine — animal sizing.

To contemplate the likeness of the ultimate fibres to their respective stems is aesthetic. The esparto fibre, one-thirtieth of an inch in length and one two-thousandth of an inch in thickness, is of cylindrical shape, with tapering ends, resembling the stem from which it is extracted.

In looking at a field of corn one sees the kinks or bends in the yellow stalk, and knows that it contains thousands of cells of fibres with similar kinks which characteristic in the fibre helps to give the paper made from it a slightly different physical form from that of esparto. Again, paper is water-borne. No other liquid will perform the same function. On a fast running machine in three or four hours twenty, thirty, fifty thousands gallons of water will have deposited a mere two or three hundred gallons of fibre on a piece of wire. A continuous flood rushes on and is rushed off after a few feet of travel. Enough water to wash the small quantity of fibre into nothingness, but it is only a carrier and a gentle depositor. At one point the fibres and their attendant accessories are whirling units, and a few moments later they have become a homogeneous sheet, made so by the friendliness of the water. Jostling, clinging, intertwining, down lie, fibre, resin, alum china clay, starch and color in a common watery bed emerging undrowned and unified, to become mankind's great messenger of thought.

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[*] A paper read by Mr. Heckford to the Technical Section of the Paper Industry in London.

The Barrett Company is helping the publicity campaign of the National (U.S.) Forestry Program Committee by making a feature of appropriate statements by R. S. Kellogg on the Snell Bill in a full page advertisement next week in the Saturday Evening Post. The Barrett Company specializes in wood preservation, the Snell Bill aims at timber perpetuation.

The Markets

NEW YORK MARKETS.

New York, July 9 (Special Correspondence).—The quieting influence of the mid-summer slackening of business is plainly in view in the paper market, and just at present there is no important activity in any branch of the trade. Certain kinds of paper continue to move in relatively good amounts, but on the whole business is indeed slow, with the situation developing characteristics quite common for this season of the year. The situation at manufacturing centres is such that numerous plants have closed down entirely for a period of several weeks. On the other hand, this condition is, as stated above, nothing unusual for the middle of the summer. Invariably at this time mills shut down for a fortnight or so to complete inventories and to make machinery repairs, and it can be said that, other than the usual slowing up of demand, the market has undergone no additional depression. The complexion of the situation is decidedly better than it was several months ago. The outlook is distinctly encouraging, manufacturers and dealers alike report customers to be showing increasing interest in deliveries for August and September, although most of them are still reluctant to place orders, and indications certainly are that with the passing of the summer, conditions in the paper trade are due for improvement.

Probably the leading development of the week has been the reopening of newsprint mills, following the agreement between mill owners and employes to place the wage question in the hands of an arbitration committee. Most of the plants agreeing to the arbitration plan resumed operations last Monday or Tuesday, and reports say that in nearly every case striking workmen returned to work. The mills of the International Paper Company, which did not enter the arbitration agreement, also reopened on Tuesday, inviting employes to return to work at a reduction in wages, the fixed rate of pay to be left open until after the arbitration committee hands down a decision, and it is understood that enough men came back to enable a majority of the company's mills to resume.

What effect the resumption of production will have on the newsprint market is at the moment problematical. This is the season when consumption of print paper is at the lowest, and current buying in the open market is at a minimum, logically, because the average publisher is getting along with contract supplies for the time being without having to purchase spot lots of paper. Quotations on newsprint are easy, as would be expected under ruling circumstances, though no actual changes have taken place. Around 5 cents a pound at mills is the price commonly quoted by domestic manufacturers on spot shipments of roll news, with now and then reports received of a sale at slightly under this figure. It is reported that Scandinavian and German producers are making offers of roll newsprint at prices which figure out down to as low as 4·25 cents a pound landed here, and the naming of such prices on foreign paper naturally has a weakening influence on the domestic market.

Book paper manufacturers are readjusting wages of the employes of their plants on a nearer normal scale. Those in the Kalamazoo district this week announced a reduction ranging from 13 to 30 per cent, effective July 11. Whether this will affect prices on book papers is a question. The probabilities are that it won't because quotations on book papers have been declining so steadily for sometime that manufacturers doubtless were obliged to revise wages. Machine finished book is quoted at 6·50 to 7 cents a pound, super at an average of 8 cents and coated book at 10 to 11 cents.

Demand for box boards, which for a time recently was fairly active, has slumped again, and the market has relapsed into a condition quite characteristic of mid-summer. Boxmakers are doing little new buying and prices are gradually easing off. Plain chip board has sold this week down to $28 per ton delivered New York, although a more common quotation is $30, while filled news board is available to consumers at $32·50 to $35 per ton New York. There is a good inquiry for boards for delivery next month, and the interest evinced by buyers indicates that they expect a considerable pick up in business within a few weeks.

Fine papers are dull. Demand is solely against direct requirements, and prices are very irregular. Wrappings are moving in small quantities mainly and are quotably unchanged. Tissues are in a moderately lively market position and quotations hold. Coarse tissues are freely sought and there is enough demand for fine tissue to maintain prices at around a basis of 95 cents per ream for No. 1 white.

GROUND WOOD—Unfavorable water conditions, compelling grinding mills in various parts of the States and Canada to close down, make for a decidedly firmer tone in ground wood. Demand is such at present that prices are given little opportunity to advance, but there is a strong upward tendency in view, and members of the trade express the belief that were newsprint mills running anywhere near at capacity, ground wood would quickly rise to $50 or more per ton. Sellers having pulp on hand are prompted by ruling conditions to hold back in offering stock out, and buyers consequently are having increasing difficulty in locating sizable tonnage. About the lowest now quoted by domestic grinders is $30 a ton at pulp mills on spruce ground wood of prime quality for immediate delivery and only in cases where producing plants are situated far from consuming points and an extra heavy freight is involved can mechanical pulp be bought for less.

CHEMICAL PULP—Although ground wood is firm, the chemical pulp market is exactly the opposite. The tone is weak, demand is close to negligible and prices on most grades are constantly moving lower. The main reason for this situation, according to representative pulp dealers, is that Swedish manufacturers are offering sulphite and kraft pulp to America at surprisingly low prices—in frequent cases at below the levels prevailing on domestic pulps. It is reported on good authority that the Swedish Cellulose Association has abandoned its minimum price agreement and that producers in that country are acting independently in an effort to market some of their surplus stocks of pulp at whatever prices can be realized. Offerings to this

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market are increasing, and some members of the trade here express fear that the Swedes may duplicate their action of 1907 in dumping large quantities of sulphite on the American market and causing prices to tumble to levels unprofitable to manufacturing. It is known that No. 1 unbleached Swedish sulphite has been offered down to 3·50 cents a pound landed here, this price including a commission to the importer, while Scandinavian kraft is reported available at 3·25 cents landed and easy bleaching sulphite at 4·50 cents.

Domestic manufacturers are endeavoring to maintain quotations, but consumers obviously are doing little buying while awaiting developments which would seem to be in their favor. Domestic news grade sulphite is a bit lower in price, sales at 3·25 cents per pound having been reported.

RAGS—The papermaking rag market is distinctly quiet. Demand for a majority of grades is next to nil, so to speak, and those grades that are moving are wanted by consumers only at spasmodic intervals and in small lots. Prices are easy, and everything favors buyers securing desired supplies at almost any figures they are inclined to bid. New cuttings are especially dull, and while some dealers are holding back in attempting to effect business with mills, others are exerting pressure on buyers in an effort to dispose of a part of their holdings. Roofing rags have sold this week at 75 cents a hundred pounds at shipping points for No. 1 packing and 65 cents for No. 2 grade, denoting a further decline. Old repacked thirds and blues of city origin are available at 1·75 cents per pound, and No. 1 repacked whites at 5 cents and less, and No. 1 miscellaneous whites at 4 cents.

PAPER STOCK—Less business has been recorded in old papers this week than in some time. With paper and board mills in numerous cases shut down, demand has sagged considerably, and most of the shipments made have been on back orders. As is usually the case when demand decreases, prices have weakened, and sales of No. 1 soft white shavings have been reported to mills at 2.25 cents a pound f.o.b. New York, of No. 1 hard white shavings at 2·75 cents, of heavy No. 1 books and magazines at 85 cents a hundred, of old No. 1 kraft paper at less than 2 cents, and of white blank news cuttings at 1·50 cents. Old folded news is bringing no more than 37½ cents per hundred pounds, while board mills are paying 30 cents a hundred as a maximum for No. 1 mixed papers.

OLD ROPE AND BAGGING—Unlike most other kinds of papermaking material, old rope is in a firm market position and prices, if anything, display an upward tendency. Four cents per pound at shipping points is the established price on old manila rope in No. 1 condition, and in some few instances mills have granted slightly in excess of this figure. Old strings are in fair call and are fetching one cent a pound at dealers' points. Bagging continues dull, and largely nominal in price.

"TWO RELATED INDUSTRIES."

Jubilee Souvenir of Kenwood Mills, Arnprior, Ont., Manufacturers of Paper-Makers' Felts.

The product of every industry is dependent on the product of some other industry at some part of the process of manufacture, and the paper-making industry, which has made such great strides in Canada in recent years, is, and has always been, dependent on the textile industry for what are know as "paper-makers' felts," hence the title of the Jubilee Souvenir of the Kenwood Mills.

This book was prepared under the direction of Perry Walton to mark the fiftieth year since the founder, Mr. F. C. Huyck, entered the business and the 25th year since the plant at Rensselaer, New York, was built. The book is tastefully produced and gives an interesting and instructive account of paper-making, both ancient and modern, and of the processes in the manufacture of paper-makers' felts. The souvenir is profusely illustrated with pictures descriptive of old-time plants, early paper-making machines and processes. Starting with the origin and development of paper it proceeds through the art of paper-making in Europe to the first paper mill in America, the era of rags, the invention and development of paper-making machines and the search for and experiments in new material for paper.

This is followed by the history of the Kenwood plants from 1870, when Mr. F. C. Huyck started to manufacture paper-makers' felts, and a description of the processes in the manufacture of seamless felts, the carding of the wool for spinning, ancient methods being contrasted with modern practice. The book gives the layman a wonderfully clear idea of the manner in which paper-makers' felts are made and one reads it through to the end with all the more pleasure because the story is presented in such a way that something of the romance of the industries may be seen.

One who frankly confesses himself to be in the wrong when he is, will be found mostly in the right.

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MOUTHS AND BACKS.

There are more of them in the world than this time a year ago. That is the fundamental consideration in world economics. There are more mouths to be fed. There are more backs to be clothed. There are not more hands to work.

The marriage rate, the birth rate, the demand for new homes—houses—increase, even apart from reconstruction of building destroyed. But the war's toll of manhood was heaviest at exactly those ages which are industrially most productive. The demand is there, the supply is short.

Why then is trade in general "as idle, as a painted ship upon a painted ocean?"

Dislocation, a temporary, and especially a local, excess of certain annual crops, and consequent loss of buying power on the part of farmers, planters, furriers, and so on. The price of wheat drops, and like a stone cast into a pool, it disturbs most a narrow circle, but as the circle widens its violence lessens, and ere long all is serene. But if the pool is small, or broken up by barriers, there is a good deal of splashing. Derangement of distributive agencies, especially in central and eastern Europe, is a present barrier to such an orderly subsidence. Surplus goods cannot now be easily and smoothly exchanged among all countries. So the children in Poland starve while wheat is almost a drug on the market in America.

Undue postponement of liquidation is another factor. The whole world has been issuing bonds, and other promises to pay, lavishly. The issuers seemed to think that the fathers could eat sour grapes, and only the children's teeth would be set on edge. We find it not quite so easy to shift all the load on to posterity's shoulders.

There is a way we can carry that load ourselves. In fact, we've got to. If the farmer's large output of grain were offset by a proportionately larger output per man in every other productive occupation, the farmer would not suffer, and trade would not suffer, but would benefit. Every farmer's family could have all the material comforts and conveniences they desired, and every artisan's family would have food in abundance. Neither is the case to-day. So far, since the world started, there has never been a time when all the consumable and enjoyable wealth of the world, divided by the world's total population, would show an excess. When was there not some large part of the world anhungered, or athirst, or naked? We can begin to talk about overproduction when total supply exceeds total demand. What we've got to do is to **increase supply and find a way of improving distribution.**

Commerce is based on the creation of local overproductions. The surplus of one place is exchanged for the different surplus of another place. Brazil must raise more coffee than she can possibly drink, Australia more wheat than she can eat, Japan more silk than she can wear. Each must raise **too much** for her own needs, of that thing which she can produce most cheaply as compared with other countries. Then they exchange their surpluses. In this way each country can support a larger and more prosperous population than she could support directly on home-grown products.

Exchange of local overproduction is the only way the world can get along. The alternative would be what is happening in Russia, where a breakdown of means of distribution is followed by a great shrinkage in the population that normally grew at a faster rate than any other in Europe.

The rest of the world is not going Bolshevik. There are mouths to feed and backs to clothe, and it can only be done through foreign trade. Somehow human affection working through human intelligence is going to find a way, so as to care for its own. For one thing, people will come to remember that a piece of paper does not become gold coin by calling itself legal tender, and that what was normal parity between gold coins before the war is not the same as equivalence of paper promises to pay in other pieces of paper. The "par" or "normal exchange" of 1913 was a different thing from what had preceded it. It will be followed by a new "par," a new "normal." And trade will proceed as easily and as conveniently on the new, as it used to do on the old. Already there are signs of a growing appreciation of this fact, and a corresponding improvement in business.—The Caravel.

BRONZE BARS FOR BEATER ROLLS.

Paper makers will be interested in the following extract from a letter written us by a well known firm of paper makers, quoted in a letter from the bronze manufacturer.

"We installed a set of American Manganese Bronze Beater bars in a beater on No. 4 paper machine at Delaware Mills in 1914. These have been in continuous operation for 6 years and were last given a thorough inspection in January, 1921. They showed no wear whatever except on the edge in contact with the bed plate. We have estimated that Manganese Bronze beater bars will last 15 years. Steel bars never have lasted, under the same conditions over three years. The alum, filler and size used in the beater, corrode and erode the iron bar to such an extent that from an end view they look tapered toward the cutting edge.

The wood filling in our beater, equipped with the Manganese bars, has not been removed since the bars were originally installed.

The Manganese Bronze bed plate was removed at the end of 2½ years for inspection and it was found necessary to chip away a little of the wood filling. Steel bars in the bed plates necessitates chipping fillings once every six months."

They also state in this letter that the service in Jordan engines is similar to that in beaters except that it is more severe and bronze beater bars should last in the same ratio to steel as bronze Jordan bars to steel Jordan bars.

The advantages over steel to be attained through the use of Manganese Bronze are as follows:

(1) Will not cause discoloration of paper stock.
(2) Stronger and tougher.
(3) Will not corrode.
(4) Saving in cost of replacements through longer life.

The physical characteristics of rolled Manganese Bronze are as follows:

75,000 pounds ultimate tensile strength.
40,000 pounds elastic limit.
25 per cent in 2-inch elongation.

Another stronger and tougher bronze called Hy-Ten-Sil, which has been in service on Jordan engines, has characteristics in the rolled stock as follows:

110,000 pounds ultimate tensile strength.
65,000 pounds elastic limit.
12 per cent in 2-inch elongation.
Brinnell hardness of about 150.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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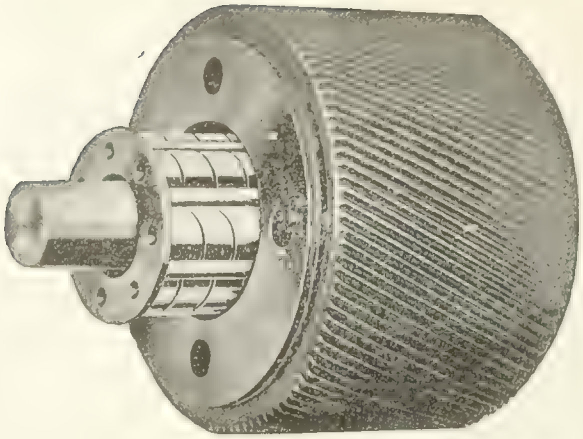

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EDITORIAL

THE FOUNDER OF THE PULP AND PAPER MAGAZINE.

In May 1903 there appeared a little paper of 52 pages, 6 x 9 in size, entitled the Pulp and Paper Magazine of Canada. This project, which started in such a small way as a monthly paper and has since attained as a weekly of an average size of 100 pages, a recognized position among trade journals in the English language, was the conception of Mr. Emerson Bristol Biggar who recently died in Toronto. Mr. Biggar's foresight and enthusiasm for creation not only brought into being the Pulp and Paper Magazine but also the Canadian Textile Journal which is another publication purchased from him by the Industrial and Educational Publishing Company. His most recent venture in the publishing line was the establishment in 1917 of the first chemical paper in Canada, The Canadian Chemical Journal, now known as the Canadian Chemistry and Metallurgy. Mr. Biggar lived to be 67 years of age, a lifetime full of good works, of courageous effort and of helpful contributions to the industry and the literature of his time.

It is with more than regret that the editor and the publishers of the Pulp and Paper Magazine make mention of Mr. Biggar's passing.

It is fitting that the readers of the Pulp and Paper Magazine should have a brief review of some of the more important activities of this energetic and kindly gentleman. We quote from Canadian Chemistry and Metallurgy.

> Mr. Biggar was born on his father's farm near Winona, Ontario, on March 6, 1853. He received his early education in that locality and for one year taught public school. His first newspaper connection was with "The Hamilton Standard." He was later Assistant Editor of "The Hamilton Spectator". In 1875 he went to South Africa where he remained five years. During that time he was connected with various papers in Cape Colony, including the "Cape Argus". He returned to Canada in 1880, and in 1883 started the "Dominion Dry Goods Report," the first paper for this trade in Canada. His interest in the textile trade in general dates from this time, and the present "Canadian Textile Journal" is a direct outcome. In 1886 Mr. Biggar established "The Canadian Exhibitor", a paper published in England to support Canadian export business. Its specific function was to represent Canadian interests in London at the time of the Colonial and Indian Exhibition.
>
> In 1893 he established "The Canadian Engineeer", which was the first engineering paper of any kind to be published in Canada. Following in succession came such papers as "The Canadian Woodworker," "Canadian Pulp and Paper Magazine;" "Canadian Miller". In connection with the Pulp and Paper Magazine he has often told the writer incidents of early days in this Canadian industry. The vision of faith which he had in the industrial development of Canadian resources was amazing. This paper was started when paper mills were not so thick as they are now, and, as Mr. Biggar said "when there were not more than thirty possible subscribers in the whole of Canada." ,
>
> His original writings were continued at all times, and include:
>
> (1) A History of the Life of Sir John Macdonald.
> (2) A sketch of the Battle of Stoney Creek.
> (3) Longevity in the Maritime Provinces.
> (4) A History of Canadian Journalism.
> (5) The Beginnings of Bathurst (N.B.)
> (6) The Canadian Railway Problem.
> (7) The History of Hydro-Electric Developments in Ontario, (1920).
>
> His only political venture seems to have been in 1911 when he strongly opposed reciprocity from various platforms. He was a regular contributor to the American and English press, and at different times has written special articles for most Canadian magazines and leading papers.

It is little wonder that a man of such accomplishments and keenness of intellect should foresee the enormous possibilities for Canada as a producer of pulp and paper.

Eighteen years ago the export of paper was not considered of sufficient importance to be referred to as a factor in Canada's exports. The volume and value also of pulpwood and pulp appear ridiculous at the present time in comparison with our record today, when the monthly record for the export of pulp under depressed business conditions is greater than the annual exports at the time the Pulp and Paper Magazine was established. From almost nothing in 1903 the exports of paper alone now amount to between 1 and 2 millions of dollars a week, and the production for home consumption has increased probably in proportion. In fact, an old timer, looking back at the number of mills that were operating at that time and comparing them with those of today, will be astonished at the developments that have taken place in less than a score of years, since this magazine was started. Not only has there been an increase of more than a 100 per cent in the number of mills manufacturing pulp and paper but the introduction of larger and faster machines in these newer mills has given an even greater increase in capacity.

The first issue of the magazine contains the following words of explanation and prophecy:

> PULP AND PAPER MAGAZINE.
>
> (From the Prospectus.)
>
> If any one asks why the Pulp and Paper Magazine of Canada comes into existence, we give answer that such a magazine is inevitable. Canada is destined to be the greatest pulp and paper manufacturing country in the world, and naturally a country which leads the world in a special industry will require an organ of information and opinion to represent that industry. Canada possesses both the raw material for the trade and the facilities for manufacturing pulp and paper to an extent unequalled by any nation. Spruce is the best of all woods for the production of pulp, and while the spruce of Canada is admitted to be unsurpassed by that of any other region of the earth, the available quantity is probably equal to that of all countries combined, being estimated by the Dominion Statistician at 450,000,000 acres. Cheap and well distributed water supply and water-power are essentials for these industries, and in this respect also the advantages of Canada are pre-eminent. There are thousands of water-powers in the Dominion still unutilized, hundreds that have not been seen by the eye of a white man, and it is calculated

> that the total water power of Canada is 40 per cent. of the entire water power of the world
>
> An intelligent people, who are rapidly increasing their manufacturing facilities in many directions and who are last developing their foreign trade, cannot fail sooner or later to realize what nature has thus placed within their reach. An earnest of what is in store for the Canadian pulp and paper industry is given in the following figures of the trade of the last few years.
>
> It was only in 1890 that the exports of pulp and pulp-wood from Canada were considered of sufficient importance to give them a separate classification in the Trade and Navigation returns. In that year the exports of pulpwood were valued at $80,005 and those of pulp at $168,180. There exports have steadily risen until, in the last fiscal year, ending June, 1902, the Canadian exports of pulpwood amounted to $1,315,038, of which $120,445 went to Great Britain and $1,194,503 to the United States; while in the same year the exports of pulp reached a total of $2,046,398, of which $818,580 went to Great Britain, $1,170,400 to the United States, $40,965 to France, and the balance to European countries, Australia and China. It is estimated that Canada will in 1903 supply 25 per cent. of the requirements of the British pulp market. In addition to these exports, the paper and pulp mills of Canada now supply the home market to a greater extent than ever before.
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> These facts justify the existence of the Pulp and Paper Magazine, and we are glad to be able to say that subscriptions and advertisements already received in advance of this first issue show that our faith is well founded.

The Pulp and Paper Magazine was founded at a time when the present development was just about beginning; in fact, in the first issue of the magazine we read that the sulphite mill at Sault Ste Marie had been completed the previous year with a capacity of 60 tons, that the groundwood mill was then manufacturing 100 tons daily and that plans for a paper mill had been prepared for a plant on the American side of the river. Fortunately for Canada, this plant was eventually built on the Canadian side. At that time sulphur was imported mostly from Sicily at a cost of $25 to $30 per ton while the plant at the Soo was making cooking liquor from sulphur dioxide gas obtained from the roasting of Pyrrhotite. The advance in the industry since has been remarkable. The mill at that time was getting gas only of 5 per cent to 6 per cent sulphur dioxide and the cooking acid contained only 4 per cent of this compound. The mill had then not quite reached a production of 50 tons per day.

COBWEBS.

On another page of this issue is an article containing a number of suggestions with regard to the best procedure for taking samples of woodpulp and determining the moisture content. There has been a lot of writing and talking on this subject but there has not yet been the concerted action which would be most desirable in bringing about an accepted standard for this very important factor in the purchasing and sale of mechanical and chemical pulp. Probably one of the reasons why the problem is still a troublesome one is that a great many consumers of pulp do not realize the importance of this determination, in consequence of which most pulp mills do not find it necessary to establish such methods of operation as will provide their customers with packages of approximately uniform weight and dryness. If something more nearly standardized were required of the producer we believe that paper mills, finding it easier to make moisture tests, would do so more frequently and more accurately and there would be consequently less friction between them and the shippers of pulp. As we have repeatedly mentioned in these columns, there is, barring a little rubbing of corners, the same amount of fibre in the shipment when received at the paper mill as was loaded in the car at the pulp mill. It should be no more unreasonable therefor, to expect and anticipate the development of a standard method of analysis for the determining of this quantity of dry fibre in pulp than was experienced in the development of satisfactory methods of sampling and analysis of coal, limestone, and sulphur.

The principal difficulty is recognized as being a proper sampling of the product. A number of satisfactory methods for certain conditions have been put forward. We think the next step, which we believe to be the only way of settling the matter, is to hold a conference of the chemists, managers and purchasing agents interested in the selling, shipping and buying of mechanical and chemical pulp. If such a conference cannot arrive at a general acceptance of standard rules for sampling and testing, then it seems that the whole matter had better be dropped and each pulp mill left to come to an agreement with its customer, when making the contract of sale, as to the manner in which the pulp is to be tested for moisture, and possibly other qualities, on shipment from the pulp mill and on receipt at the paper mill.

A careful reading of the interesting series of articles on the Forestry in Scandinavia, which has been contributed by Mr. Edward Beck, cannot fail to impress thoughtful Canadians as to the decidedly unstable foundation that they are preparing for the future of the wood using industries by the present methods of handling, or rather mishandling, the forests of the Dominion.

THE FOREST FIRES SITUATION GREATLY IMPROVED.

Mr. G. H. Prince, Chief Forester for New Brunswick had advised the Pulp and Paper Magazine that the New Brunswick situation is very greatly improved by the general rains on the 15th, which makes the first rain of any consequence since last April. The dry period this year has been the longest and driest of which there is any record. The northern and central parts of the province escaped serious fires but there were several bad fires in the south, principally on burned over land. It is most fortunate that the loss of standing timber is comparatively light and this is surprising when the conditions are considered. The chief causes of the bad fires have been fishermen, campers and lightning.

Encouraging reports also come from the Chief Foresters of Quebec and Ontario to the effect that while there has been a great loss and serious situations, the result is less disastrous than had been at first thought unavoidable.

Canada owes an unending debt of gratitude to the courageous fighting of the fires that have threatened to bring diaster not only on the present generation, but reaching far into the future.

The Testing of Wood Pulp Shipments for Content of Air Dry Pulp*

The Emerson Laboratory, Springfield, Mass.

Among pulp buyers and manufacturers there seems to be need of detailed directions as to the method of testing all kinds of pulp shipments for weight and moisture content which will be sufficiently elastic to fit the needs of every condition of pulp, and yet sufficiently detailed to be a satisfactory guide to the inexperienced buyer or analyst as well as to the official analyst in matters of controversy. We have, therefore, drawn up the following tentative regulations and publish them in the hope that they may receive such careful study and discussion on the part of those interested in the matter as to bring about the formulation of detailed instructions which will meet the general need in the matter.

Determination of Gross Weight of Shipment.

The gross weight of a shipment of pulp should be ascertained by one of the following methods:

(1) The gross weight of the car lot may be taken on accurate railroad scales, less the tare of the empty car actually weighed. The marked tare of the car is not to be accepted unless verified.

(2) The sum of the net weights of trucks lots taken while loading or unloading.

(3) In the case of baled pulp, the number of bales may be multiplied by the weight of the average bale obtained by weighing 10 percent of the bales of the shipment, if the bales are reasonably uniform, or 20 percent in case the individual bale weights vary widely, according to the method hereinafter described.

(4) In the case of roll pulp, when the rolls are reasonably uniform in size, the number of rolls may be multiplied by the weight of the average roll obtained by weighing 20 per cent of the rolls of the shipment as hereinafter described.

Weighing should be made only on such scales as have been recently checked by a recognized sealer of weights and measures or the accuracy of which has been satisfactorily determined by the analyst in charge of the test.

Determination of Moisture Content of Shipment.

Pulp purchasers should ascertain at the time that the contract is made, especially in the matter of long contract, the exact method used at the pulp mill for the estimation of the moisture in the particular pulp in question, and, if possible, that the same method should be used in testing the pulp at the time of receipt.

For pulp purchases made in the open market, or in other cases where no agreement has been made as to the matter of method of sampling, the methods hereinafter described are recommended.

Procedure in Case of a Discrepancy.

In the case of a discrepancy between the weight as given on the invoice and as found by the consignee, the following procedure is recommended:

Pulp should always be so stored that each car lot forms a distinct separate pile and no pulp should be used until it is ascertained that the air-dry content as found by the test checks that of the invoice. In case of any considerable discrepancy, the matter should be reported as soon as possible and a retest made by such official tester as shall be agreed upon between the two parties to the contract. Only such claims for shortage should be considered as are made sufficiently promptly to enable the official analyst agreed upon for retest work to weigh and cut samples within ten days of the time of unloading the pulp and when any delay beyond the ten days specified is not the fault of the purchaser. The method to be followed by such official analyst should be such an one of the methods hereinafter described as shall be acceptable to the two parties to the contract.

Procedure in the Case of Reweighing.

In the event of it being necessary to reweigh stored pulp by an official tester or analyst, the following procedure is recommended:

Before proceeding to the weighing of a shipment of pulp in storage, the analyst should ascertain that not less than half of the parcel in question is available for such retest.

The procedure to be followed in this case should be one of the following methods and the choice of method should be regulated by the kind of pulp under consideration.

Baled Pulp.—Ten percent of the entire number of bales in the shipment, but not less than ten bales, such bales being sound and intact, should be weighed, and from the average weight of these bales, the weight of the shipment should be calculated.

As an optional method, the entire shipment may be reweighed, and this is recommended in cases where the individual bale weights vary widely.

Roll Pulp.—The entire shipment of rolls should be reweighed, if available. If this is not possible, then 20 percent of the rolls should be reweighed, such rolls being all sound and intact and as nearly the average size of roll as possible. From the total weight of these rolls, the weight of the entire shipment should be calculated.

Hydraulic Pressed Laps.—(1) If such laps are received tied in bales, and the individual weights of such bales are fairly uniform, then it is sufficient to reweigh 10 percent of the bales of the shipment and, from the average bale weight thus obtained, calculate the weight of the entire shipment.

As an optional method, the entire shipment may be reweighed, but this is only recommended in cases where the individual bale weights vary widely.

(2) If such laps are received tied in bundles or packages, the number of said bundles or packages being stated in the invoice, and the individual weights of such bundles or packages being fairly uniform, then it is sufficient to reweigh 10 percent of such bundles or packages and from the average bale weight thus obtained calculate the weight of the entire shipment.

As an optional method, the entire shipment may be reweighed.

(3) If such laps are received tied in bundles or packages, the number of which is **not** stated on the invoice, or if the individual weights of such bundles or pack-

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* Suggestions submitted for consideration by the Technical Association of the Pulp & Paper Industry. See also article in Pulp and Paper Magazine, May 26, 1921.

ages vary widely, or if the shipment consists of an indefinite number of loose laps, then the entire shipment should be reweighed. In making such reweighing the analyst must accept the statement of the consignee that the pulp weighed is the **entire** shipment in question.

Unpressed Laps.—The same considerations should apply as in the case of hydraulic pressed laps, described above.

Procedure for the Taking of Samples.

In taking samples for the estimation of the moisture content of pulp shipments while unloading or from storage the procedure to be followed should be one of the following methods, and the choice of method should be regulated by the kind of pulp under consideration.

Baled Sheet Pulp, Domestic or Foreign.—The method recommended is essentially that which has been adopted by the American Paper and Pulp Association and the Association of Woodpulp Importers and is now in general use.

Ten percent of the entire shipment, but not less than ten bales should be sampled. If the gross weight is to be arrived at by a calculation from the average weight of the bales which are sampled, then only sound and intact bales should be taken for sampling, and these should be chosen from the different sections of the shipment and the analyst should be careful to observe that no unusual conditions prevail in the selection of the bales. If the entire shipment is to be reweighed at the time of sampling, then such bales should be chosen for sampling as will, in the careful judgment of the analyst, most nearly represent the tenth of **all** the bales of the shipment, whether damaged or intact. These bales may be conveniently chosen by taking every tenth bale handled during the loading or unloading. If, in the best judgment of the analyst, the tenth bale is not representative and should not be chosen, then the ninth or the eleventh bale or the bale nearest to the tenth which is representative should be chosen. The accurate weight of all bales sampled should be ascertained before sampling and no other bales than those weighed should be sampled and, whenever bales are numbered or marked, the number and mark should be given on the report, togther with the weights obtained.

The samples should be taken by boring into the bale to a depth of three inches with a special auger which cuts a disk about four inches in diameter. The holes which are bored should be so located that in five successive bales they represent a portion extending diagonally acress the bale. Each bale to be bored but once. The first hole to be bored at the corner, the edge of the cut being at a distance of one inch from the edge of the bale. The second cut should then be made half way between the center and the corner of the bale, the third cut should be at the center of the bale, the fourth cut should be opposite the second cut, half way between the center and the center and the corner of the bale, and the fifth cut in the opposite corner in a position corresponding to the first bore.

Ten of these disks should be chosen from each cut as follows:

1 disk 2nd sheet from the wrapper.
2 disks 1 inch deep.
3 disks 2 inches deep.
4 disks 3 inches deep or from the bottom of the cut.

Roll Pulp—Twenty per cent of the entire shipment, but not less than twenty rolls should be sampled. These rolls should be chosen as to represent as nearly as possible an equal number of rolls from the left-hand deckle edge reel, the right-hand deckle edge reel, and each of the center reels of the entire machine roll. This is essential for correct work since the moisture in the various reels coming from the same machine at the same time has been shown to vary by as much as 8 per cent.

If the gross weight is to be arrived at by a calculation from the average weight of the rolls which are sampled, then only sound and intact rolls, whose size is as near the average size as is possible, should be taken for sampling, and these should be chosen from the different sections of the shipment with the same care as is recommended in the case of baled pulp. If the entire shipment is to be reweighed at the time of shipment, then such rolls should be chosen for sampling as will, in the careful judgment of the analyst, most nearly represent 20 percent of all the rolls of the shipment, whether damaged or intact. The accurate weight of all rolls sampled should be ascertained before sampling, and the average roll weight obtained from the weight of the rolls which are sampled should approximate closely that arrived at by the reweighing of the entire shipment.

Rolls should be sampled by one of the two following methods:

(1) **The Disk Method for Roll Pulp**—The samples should be taken with the same cutter as is used in the case of baled pulp. The holes which are bored should be so located that an equal number will have been taken from each position with reference to the drying machine. One-third of the reels from the left deckle edge of the machine should be bored at the center of the reel, one-third 3 inches from the deckle edge and one-third 3 inches from the cut edge. The same rule for location of cut should be followed in boring the reels from the right deckle edge of the machine and the center reels without deckle edge.

The hole bored should be 3 inches deep and five disks should be chosen from each cut as follows:

1 disk 2nd from the wrapper.
1 disk 1 inch deep.
1 disk 2 inches deep.
2 disks 3 inches deep or from the bottom of the cut.

If the weight is to be accepted as invoiced and moisture only is to be checked, then the disks should be bored as above, but the five disks should be chosen from the bottom of the cut. (At this distance from the surface the moisture content would scarcely vary from the amount as the pulp left the machine. If the pulp is reweighed, the sampling must take account of possible change in moisture due to greater exposure of outer layers.—Ed.).

(2) **The Strip Method for Roll Pulp**—The Rolls which have been chosen for sampling should be cut cut from end to end to a depth of three inches and five of the sheets so formed should be chosen as follows:

1 sheet 2nd from the wrapper.
1 sheet at a depth of 1 inch.
1 sheet at a depth of 2 inches.
2 sheets at a depth of 3 inches.

From each of these sheets a strip 1½ inches wide and extending the full length of the roll should be cut and preserved for sampling. The width of strip may vary from 1 to 3 inches, but all strips of the same sample should be approximately the same width. (If rolls are tested for moisture only, all 5 sheets should be from the 3 inch depth. See above.—Ed.).

Lap Pulp, Hydraulic-Pressed.—(1) If such laps are baled, then 10 per cent of the number of bales should be chosen for sampling. If the entire shipment is to be weighed at the time of sampling, then the bales for sampling should be so chosen as to most nearly represent the condition of the entire shipment, that is, if any unusual condition prevails in a portion of the shipment, such as a wetting of one end of the car, or an unusual amount of drying out of the top layer or near the door of the car, then the same proportion of the bales intended for sampling should be chosen from these abnormal bales as exist in the car. If the gross weight is to be calculated from the average weight of the 10 per cent of the bales which are chosen for weighing and sampling, then only such bales should be chosen as are sound and intact and which, in the judgment of the analyst, have not been subjected to any abnormal condition during transportation.

The accurate weight of all bales to be sampled should be ascertained, after which the bales should be broken open and such a number of laps chosen as will give a total of not less than thirty laps and not more than forty laps. If only one lap is to be chosen from each bale, then from the first bale the outside lap is to be chosen, from the second bale the second lap, from the third bale the third lap, etc. If two laps are to be chosen from each bale, then from the first bale the first and second laps should be chosen, from the second bale the third and fourth laps, from the third bale the fifth and sixth laps, etc.

(2) If such laps are tied in packages or small bundles, then not less than thirty nor more than forty such packages or bundles should be chosen from all parts of the car and one lap should be chosen from each such package or bundle.

(3) If such laps are piled loosely in the car, then not less than thirty laps nor more than forty laps should be chosen from different portions of the car. This may be very conveniently done by choosing one or two laps from each truckload of laps as the pulp is being unloaded.

The laps which are chosen for test should be sampled by one of the two following methods. In either case the depth of the cut should be half way through the lap.

The Strip Method for Hydraulic-Pressed Lap Pulp.—The strip method is in use in a large number of mills making hydraulic-pressed pulp and, therefore, should be used in the testing of all pulps from such mills. The strip method is approximately correct if applied as follows:

One strip should be cut from each lap, one third of the number from the center of the wet edge and perpendicular to that edge and two-thirds of the number from the center of the end of the lap and perpendicular to that edge. The strips should be two inches wide and of such a length that the sample shall represent the same proportion of relatively wet edge and and of relatively dry center of the lap as is found in the average lap of the shipment. The length of each strip should be accurately measured and the width of all strips in the same sample should be approximately the same.

Example. If the laps average 20 x 30 inches in size and the average width of the unpressed lap edge is 3 inches, then each strip cut should be 9.4 inches long. If such strips are cut one inch too long or one inch too short, the sample may contain as much as 2 percent more or less dry pulp than is found in the entire lap.

The Wedge Method for Hydraulic-Pressed Laps.—The modification of the original Woodruff method, as proposed by F. M. Williams, seems to be reasonably correct in theory and more convenient than the original method and, therefore, this modified method may be used where the wedge method is desired.

This wedge should be 2½ inches wide at the edge of the lap and should extend to a point in the exact center of the lap. One wedge should be cut from each lap. One-fourth of the number of wedges should be cut from the middle of the dry edge of the lap to the center, one-fourth of the wedges from the middle of the wet edge of the lap to the center, and one-half of the wedges from the midde of the end of the lap to the center. It is important that these wedges be cut accurately, using a measure in each case, and that the point of the wedge be not lost in removing the sample from the cut. A variation of one inch in the total length of the wedge will cause an alteration of the total moisture found in the sample of from 1 to 2 percent.

Lap Pulp, Unpressed.—Forty laps should be chosen for sampling. If the sampling is done at the time of loading or unloading, then it is convenient to choose one or more laps from each truck load, but if any abnormal condition exists, such as an excessive drying out of the top layer or near the door, or a wet end of the car, then the same proportion of laps should be chosen from these abnormal laps as exist in the car. If the sampling is done on pulp which is already in storage then no lap should be chosen which is not covered by at least four other laps and so surrounded that the edges have not had the opportunity to dry out, and the laps chosen should be as thoroughly distributed throughout the pile as is possible.

For this kind of pulp the strip method is recommended exclusively. These laps are made on a wet machine and moisture variations are largely due to differences in the pressure of the roll across the sheet; therefore, the scientific and practical method of sampling this pulp, both at the pulp mill and at the paper mill, is by taking a strip across the lap in the machine direction.

Strips should always be cut across the lap from deckle to deckle and, in sampling at the receiving station, may be sampled by the cutting of inch-wide strips from the folded lap, or the lap may be spread open before cutting, at the convenience of the analyst. (From deckle to deckle is **not** in the machine direction.—Ed.)

Procedure for the Handling of Pulp Samples After Cutting Them.

Samples should be deposited, immediately after cutting, in a metal can with a tight-fitting cover and the net weight should be obtained as soon as practicable after the taking of the samples. In the case of an unavoidable delay between the time of taking the samples and of weighing, a special precaution should be taken to seal the edges of the cover with friction tape or otherwise.

The scales used for weighing pulp samples should show a decided deflection by the addition of 1 gram or ·03 ounce and two weighings of the same article taken at different times should not vary by more than that amount and the sensitivity of the scale should not be decreased below that amount when carrying the maximum load of pulp.

After the wet weight of samples has been ascertained, samples should be placed in a suitable oven and dried at a temperature as near 212° Fahr. as possible until two consecutive weighings, taken not less than four hours apart, do not differ by more than 3 grams or 0·1 ounce, and the minimum of these weights should then be taken as the bone dry weight of the sample. The entire bulk of the sample selected from the pulp should be dried out for the test. The temperature in the drying oven should not exceed 220 deg. Fahr., nor, except when containing wet pulp, be less than 204 deg. Fahr. No wet pulp should be put in the oven in the four-hour interval between the two final weighings of a lot of pulp already in that oven, nor should there be any other source of excessive moisture in the air passing through the oven just prior to the final weighing of a sample of pulp. All bone-dry weighings should be made as rapidly as possible after the removal of the pulp from the oven and before the pulp has had an opportunity to absorb moisture from the surrounding air.

Calculation of the Air-Dry Content of a Pulp Shipment.

The bone-dry weight of a pulp shipment is considered as 90 per cent of that of the air-dry weight. Therefore, in order to arrive at the air-dry content of a pulp shipment, the percent of bone-dry pulp found in a sample should be multiplied by 10/9th, then by the gross weight of the shipment.

Considerations Involved.

The following points have been considered in formulating the foregoing rules for the estimation of the air-dry content of wood pulp shipments:

1. The careful and continuous checking of the weight and moisture as given on every invoice of pulp shipment is especially urged upon all pulp buyers as a means of stimulating greater care in the obtaining of the invoice figures.

2. The proper time for a pulp buyer to take up the matter of a moisture test method to be used on a particular grade of pulp is at the time that the contract is made. Even though the buyer understands that the method used at the pulp mill is not theoretically correct if the pulp is purchased with the understanding that such a method is in use at the pulp mill, then the pulp should be tested at the receiving mill by the same method as that used at the pulp mill. If the same method is used at the pulp mill and at the receiving mill and the manipulative details are accurately followed in both tests, the buyer, can feel justified in making claim for a variation of more than 2 percent in the air-dry content of the shipment.

3. In the recognized method for the sampling of baled pulp, the instructions are that not less than 5 percent nor more than 10 percent of the bales should be sampled. In matters of controversy, the request for the reweighing of 10 percent of the bales has been so general that in these recommendations the minimum of 5 percent has been omitted. Baled shipments usually contain 180 to 350 bales to a car, so the sampling of 10 percent of the bales is not an excessive hardship in any case.

4. In the retesting of stored, baled pulp, analysis are frequently requested to reweigh the entire shipment and retest 10 percent of the bales. However, the gross weight as calculated from the weight of the 10 percent of the bales chosen for sampling usually checks reasonably closely the gross weight obtained by reweighing the whole shipment. In the rehandling, bales are frequently damaged and if the whole shipment is reweighed, a portion of these damaged bales must be sampled. For this reason, the recommendations strongly favor the reweighing of only the 10 percent of sound and intact bales which are to be sampled.

In the retesting of stored roll pulp, the recommendations favor the reweighing of the entire shipment where possible, since these rolls usually vary widely in weight and it is not possible to obtain an average roll weight by the weighing of a small number of rollls. If the whole number of rolls in the shipment is not available, then 20 percent should be weighed in order to obtain the average roll weight.

5. Roll pulp is run on a drying machine which is from two to five rolls wide and is usually tested at the pulp mill by taking at regular intervals a strip the full width of the machine from deckle edge to deckle edge. For this reason the scientific method of sampling such pulp at the receiving mill is by choosing for sampling such proportion of right deckle rolls, left deckle rolls (as determined by the direction in which the pulp is rolled) and non-deckle edge rolls as will represent an even number of rolls from each portion of the machine as sampling each roll by cutting strips the full length of the roll. However, the carrying out of this method at a receiving mill especially with a pulp which is already in storage or one made on a drying machine which is four or five rolls wide, is looked upon as complicated and introducing more error in manipulation than would result from a simpler method. For this reason, the usual method for sampling roll pulp is by boring disks from the rolls selected at random from the shipment While the results of this method have been so frequently criticised that we have suggested the more laborious method of choosing the rolls for sampling according to position on the drying machine, we are of the opinion that if 20 percent of the rolls, representing equally all portions of the shipment, are chosen without consideration of position on drying machine, results are usually satisfactory.

6. In the matter of the disk method of sampling roll pulp, so far as is known to the writers of these recommendations, no research has been done which would assist in determining the exact position on the roll at which the two end borings should be made. Instructions in use locally vary from one inch from the end to six inches from the end. Therefore, in the recommendations, the arbitrary distance of three inches has been fixed.

7. In the matter of hydraulic-pressed laps, there seems to be no question but that Mr. Woodruff thoroughly analyzed the condition of these laps and proposed the only really scientific method which has been submitted for sampling. The moisture content of the strip sample as usually taken bears no relation to the moisture content of the entire lap and usually favors the pulp seller. Some pulp mills are taking wedge samples, but so incorrectly that it is no improvement except in name. One pulp mill, at least, is following carefully, the Woodruff method of sampling. The seeming difficulty in the marking out of the wedges appears to discourage the average man doing routine pulp testing and for that reason, although the Woodruff wedge method is the most correct method which has been suggested and has been discussed for several years, it has not met with very general favor as a regular practice. For this reason only, it is omitted from the recommendations and in its place are two, approximately correct, but simpler methods. The error in the strip method as proposed is that it assumes that the whole portion of the lap which has been under the press is equally wet, which is not true, especially with laps which have been stored for some days between the time of pressing and of testing. The error in the Williams modified wedge method is that it assumes that the moisture content of the center of the wet edge is the same as that of the corners of the lap which is probably not true. However, the error in either of these cases is probably not appreciable.

8. Some pulps are shipped on skids and for this kind of shipments a method should be adopted, but the writers are not prepared to make recommendations for skid pulp.

RAPID GROWTH OF TIMBER FOR PAPER MILLS.

An intensive survey of Canadian timber lands, by Edward F. McCarthy, one of America's best known foresters and forest investigators, has shown that surprising crops can be secured from cut over pulp wood land by proper handling.

An address before American foresters, attending the annual convention of the Woodlands Section of the American Paper and Pulp Association, told of his investigations on a 19,000 acre tract of timber land. He showed that there is a startlingly rapid growth of new timber on cut over pulp wood lands of mixed hard and soft woods, when protected from fire.

Mr. McCarthy was the first forester on the faculty of the New York State College of Forestry at Syracuse, but left New York State to make a series of investigations of Canadian forests for the Canadian Commission of Conservation.

Mr. McCarthy's investigations showed that ten years after an original cut of 2.9 cords per acre on virgin mixed timber in the Canadian region, there was a stand of 4 cords, and at the rate of growth maintained in the last ten years, in another ten there will be 6¼ cords per acre, and 7.6 cords in 15 years. His investigations, however, showed a serious mortality due largely to insects.

Forestry in Sweden — Part 4

By EDWARD BECK, Publicity Department, Canadian Pulp and Paper Association.

"Yes, Sweden will have some worth while forests in fifty or one hundred years," admitted Baron Mannerheim, head of the Kramfors Company in Stockholm, one of the largest lumber, pulp and paper concerns in Sweden and among the largest owners of private forests, in reply to a complimentary remark on the condition of Sweden's forests. The Baron knows Canada. He made an extended visit there a year or so ago. He saw much to admire in the industrial development of the Dominion. He thinks, however, that we are not very far advanced in the administration of our forests. "You ought to make indiscriminate cutting impossible," he said. "You ought to pass laws against it. In the long run, the companies over there would find it to their general advantage as well as to the country's general good."

The Baron is himself an ardent believer in reforestation and has done much for its promotion in Sweden. His own forestry department, under his inspiration, is probably the most progressive of any in the country, and is much farther advanced than any other. The personnel of his foresters is exceptionally high.

I don't know how old the Baron is. If called upon to guess I should say somewhere in the sixties. In all probability he will not be living fifty years hence to see the fruits of his efforts to improve Sweden's forests; certainly not to see them as they will appear after the lapse of another century. Nevertheless, his modest admission is not only typical of his own disinterested regard for the forests, but is characteristic alike of the Swedish national attitude towards the subject of forestry in general. Everybody is looking forward to and working for the future. There is not the slightest danger of Sweden ever becoming a forest bankrupt; or that the Swedish forests will ever be exhausted for the sake of producing immediate profits, however great the temptation.

That is not to say, however, that Sweden does not now possess fine forests in abundance, or that these forests are not now being utilized to the limit of prudence and to the full extent of the demands made upon them by Sweden's constantly increasing export trade in lumber, pulp, paper and other forest products as well as to supply all of the domestic requirements of these commodities.

After a thorough and painstaking inspection of several government forests and four extensive private forests, including those owned by the Mo Domsjo Company, the largest private forests in Sweden, the Holmens Bruks Company, the Kramfors Company, the Fiskeby Paper Company, as well as of forests owned by communities and by farmers, one is most impressed with the fact that in Sweden the forests are farmed. They are cultivated with all the care and assiduity that is given to the cultivation of the wheat lands in the Canadian Northwest or to the sugar plantations in the Southern States. The result obtained is a permanent, constant and ascertainable current yield and an assurance that, barring accidents, this yield will continue indefinitely and in increased volume for all time to come.

Not all Swedish foresters agree as to the superiority of any given method of reforestation, but none are allowing their forests to go uncultivated. Planting and seeding follow cutting almost invariably. Experiments are in progress to ascertain how to obtain a maximum yield in the shortest period of time. Drainage is resorted to to improve the soil. In the Mo Domsjo forests more than 6,000 miles of ditches have been constructed to this end, at large cost but with highly gratifying results. Most of the companies maintain private nurseries in which to develop the plants. Some of them are putting out two million and upwards of seedlings every year. Hardly any land is permitted to go uncultivated for more than three years after being cut over, the interval being allowed merely to permit the soil to recuperate itself and to get in readiness for a new growth. Seeding is carried on by means of horse-drawn mechanical seeders of plow-like appearance. Pine and spruce are usually sown in conjunction, an equal quantity of each species of seed being dropped into the ground together. Boys and girls and young women, as well as men, are employed in the planting and seeding operations, the object being to reduce the labor cost to the minimum.

Re-planting is admittedly a costly operation, especially when the interest on the capital investment is taken into account. But here they do not consider the question of compound interest on the capital which is the bugbear of reforestation in Canada. Each year's operations are looked upon from a bookkeeping point of view as a unit. Cost is calculated on that basis. Swedish forest experts are not all convinced, however, of the efficacy or the economic value of artificial replanting, although evidences of its practical results are by no means wanting. Southern Sweden possesses some fine examples of man-planted forests, which are from fifty to sixty years old. They are now ready for their first thinning and will yield a very satisfactory harvest. In some of them the trees are planted at regular intervals of six feet in either direction. They are mostly pine and spruce. They are fine upstanding trees and present a uniform appearance of almost military precision. There are a few cultivated forests older than those described but systematic efforts at replanting seem to have had their beginning much less than fifty years ago.

In Northern Sweden apparently no efforts were made to propagate forests in any large way up to fifteen years ago. Since that time planting and seeding have become very general. Everywhere one finds plantations of from five to fifteen years of age giving signs of healthy and vigorous growth and promising extensive crops of mature trees in due time. In many of these plantations, foresters tell us their plantings yield 95 per cent of helathy trees.

As in Canada, so in Sweden, there are two schools of foresters. One believes in leaving to Nature most of the work of replanting the forests and of rendering only such assistance as may seem to be actually necessary. The other believes that the best results are to be obtained in every case by artificial cultivation. With the former, financial considerations frequently prevail. "What's the use of spending money to do something which Nature will do alone and do much better if it is left to her to do?" they say. They also assert that artificial propagation impairs the stamina of the trees and involves risks of early losses when are avoided when Nature does the work.

Mr. Carl Eric Barth, chief forester for the Fiskby Paper Company, is one of those who believe in giving Nature every chance to replant the forests. In his woods near Finspong he shows some interesting results obtained from strip-cutting, as it is called. This involves the clean cutting of a strip about 1,000 feet wide and two or three times as long with the standing forests on both sides. Seeds from the standing trees are scattered by the wind over the clean-cut area and in time take root and develop into trees. Plots so cut in the Finspong woods show a proficient growth after three years. On some plots cut over about seven years ago there is a fine growth of young trees which give a promise of developing into excellent stands of pine and spruce. Mr. Barth is very enthusiastic for this method of cutting and has prepared an elaborate report showing its results for presentation to the Swedish Forestry Association which, in conjunction with a number of Norwegian foresters, is to visit his woods this summer.

Forestermaster Isaac Ljungquist of the Holmen Bruks Company is also strong for the natural method of reforestation and has many spots in his woods to prove what can be done in this way. He is opposed to spending money on nurseries and on planting and seeding unless it can be shown that such expenditures are vitally necessary. He admits that there are circumstances which can only be met by artificial means and he doesn't neglect to seed or plant his land when natural means are not available.

But the success of Sweden's forests, it is very evident, depends less upon the methods employed for securing a new growth of trees than it does upon the scientific means employed in harvesting the current crop. In America, and to some extent in Canada, forests are cut down on the principle of securing the greatest yield of wood for the smallest outlay of money. In Sweden, both in theory and practice, the main object sought in cutting seems to be to obtain the maximum yield of wood compatible with the least injury to the standing forests. There is all the difference between scientific and unscientific forestry in the two principles. The first consideration given to logging in Sweden is how to cut in such a manner as insure an increased growth to the remaining forest. With the exception of the "strip-cutting" methods above referred to and which is by no means universally employed, there is little or no clean-cutting. Trees are taken out by selection, either because they have reached their maximum growth and consequent yield or to ensure a better opportunity to those left standing by improved light, ventilation and sunshine. Enough birch is usually left to afford protection to the growing pine and spruce. Attention is given to crop rotation. The soil is studied as to its fitness for the species to be grown on it. Drainage is resorted to wherever necessary. Where clean-cutting is indulged in it is made in selected spots and these spots are replanted or seeded with the least possible delay.

In every direction the forests show the effect of the good care they receive. Barren spots are very scarce. There is very little underbrush to obstruct the view or make travel through the forests arduous. Most of the forests present the appearance of cultivated park areas. Large groups of trees, especially pines and spruces, grow uniformly in heighth and girth. There are few crooked, stunted or dwarf growths, defective trees being the first to yield to the woodman's axe. After a cutting the minor branches are left on the ground to afford protection to the seedlings and contribute to the fertility of the soil, but debris-strewn forests are unknown.

To sum up, it may be said that while intensive forestry in Sweden may not have reached the degree of development attained in Germany or in France it is beyond criticism in its employment of those methods of cutting best designed to obtaining the greatest possible yield of timber and at the same time facilitate as much as possible the best natural reproduction, and that in accommodating the adaptability of the species employed to the varying conditions of the country, in efficient fire protection, in counteractng the influences of forests insects and diseases and in its economical utilization of the forest yield in industrial operations, Sweden ranks second to no other country.

RATES OF PAY PROPOSED BY THE INTERNATIONAL PAPER COMPANY.

The Digester gives the following list of the rates which the International Paper Company, operating more than twenty mils in the United States and Canada, has asked their men to accept as a basis for terminating their strike and returning to work.

	Rates per hour	Hours per day	Daily Wages
Wood Department:			
Boom Gang	39c	8	$3.12
Conveyor Men	38c	8	3.04
Barker Men	42c	8	3.36
Splitter Men	42c	8	3.36
Wood Handlers	38c	8	3.04
Chipper Men	43c	8	3.44
Groundwood Department:			
Wood Handlers	41c	8	$3.28
Sliver Screen Men	41c	8	3.28
Grinder Men	48c	8	3.84
Stone Sharpeners	49c	8	3.92
Screen Tenders	48c	8	3.84
Decker Men	46c	8	3.68
Sulphite Department:			
Tower Men	38c	8	$3.04
Sulphur Burners	46c	8	3.68
Cooks	64c	8	5.12
1st Helpers	53c	8	4.24
2nd Helpers	47c	8	3.76
Blow Pit Men	47c	8	3.76
Screen Tenders	48c	8	3.84
Wet Machine Tenders	46c	8	3.68
Paper Mill:			
Beater Men	40c	8	$3.20
Mixer Men	49c	8	3.92
Machine Tenders	88c*	8	7.04
Back Tenders	72c*	8	5.76
Third Hands	59c*	8	4.72
Fourth Hands	46c	8	3.68
Roll Finishers	44c	8	3.52
Weighers	48c	8	3.84
Markers	44c	8	3.52

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* Highest rate paid.

Box Makers' Association Worth While

By S. J. FRAME, Secretary Treasurer.

I would report that the financial statement for the year ending May 31st, 1920, has been duly audited by Mr. W. P. Bennett, Honorary Auditor.

The Association has at present 47 active members and 41 associate members, this being a net increase of one in the active membership and a decrease of six in the associate membership. When last year the Association increased the fees, a decrease in the associate membership was anticipated to an extent greater than what has actually taken place.

The Association now again starts on a new year.

The year just closed has been an active one for the Association, it having during the year again demonstrated its usefulness by taking up numerous matters affecting the Canadian Paper Box industry, some of the more prominent matters which have been dealt with being,—

> Conference with the Board mills last Fall in respect to prices and subsequent conferences with them towards increasing the uses of Paper Boxes.
>
> Establishment of average standards of time in connection with the manufacture of Shoe Box, 1-lb. Candy Box and For Folding Box plants.

Great credit is due to the President, Vice-President, Advisory Committee, and other Committtees for the amount of time and effort which they have all cheerfully given, in the Association's interest.

Consistent with its slogan "Advance", in keeping with the dignity of the Association and the prestige of the Canadian Paper Box industry, the Association, during the year just ended, has been incorporated by the Dominion Government.

The Incorporation is in conformity with the fact that for some considerable time past, when the Dominion Government, Ontario Government, or other public bodies have desired information on the Canadian Paper Box industry, the Canadian Paper Box Manufacturers' Association has been recognized as the headquarters of the industry.

That live organization, the Toronto Carton Club continues actively in existence, holding luncheon meetings twice monthly, and doing excellent work towards stabilizing conditions in Toronto during the present dull time.

Respecting trade conditions, I observe that in my report of a year ago I referred to the shortage of board which was incidental to the world wide shortage of raw material then prevailing. Since then the situation has altogether changed, and instead of a scarcity, there is abundance, not only of materials, but of labor, and instead of a seller's it is now a buyer's market.

The change in the situation is not by chance, but from the workings of unchangeable economic laws, which govern, and notwithstanding artificial conditions arising from time to time, assert themselves in the long run.

The process of adjustment now taking its course is going on as satisfactorily as could be expected. A number of lines are now below their 1913 level and may increase in price. Other lines have probably not been reduced sufficiently to reach their true level. Therefore, speaking of commodities generally, prices are out of alignment, but indications point to the downward movement in a violent sense having been arrested, or to a very great extent at least.

It can therefore be said that considerable progress has been made towards the goal of stabilizing of prices which has to be reached before buyers will be inspired with confidence to buy freely.

There is still considerable smoothing out to be done of labor costs, following the reduction in food and manufactured goods, before the construction of buildings, which this continent is most in need of at the present time, can be commenced on a large scale. When that point arrives, and the indications are that it will come towards the end of this year or early next year, another period of prosperity can be looked for.

In the meantime, the Paper Box Industry, in company with many other industries, is finding trade conditions very dull and orders scarce. In view of such conditions, the Toronto Carton Club has during the year 1921 taken up from various standpoints—and with beneficial results—the question "How can we make the best of and improve present quiet conditions in the Paper Box industry?"

Bearing on the above question, the following thoughts occur to me,—

The present times call for the quality and steadfastness to the greatest degree, and to a far greater extent than in the last few years.

In the keenness of competition, manufacturers need to guard against their minds becoming obsessed with what their competitors are doing. In this respect, I would quote from a paper read by me under date February 24th, at a luncheon of the Toronto Carton Club,—

> "A great part of the world's troubles come through ignorance, and ignorance is the greatest cause of cutting of prices. Ignorance of what your competitor is actually doing.
>
> It is generally known that it is not uncommon to find Ananiases among the buyers, yet how often is the word of the buyer accepted without taking the trouble to get the facts from your competitor.
>
> Another point always to be remembered is that while on a competitive job, a number may be bidding, only one usually gets it. When you do not get the job, take it coolly. Do not assume that your competitor has cut the price. Do not, because the buyer tells you your price is high, go back and refigure a ridiculously low price just to find out whether it will get the job, or to spite the other fellow. Discount that feeling which seems to be so common among salesmen, that the buyer is a friend of yours, and that on even terms you will get the business. You may think he is a friend of yours, whereas he may be only using you to check up the figures of someone else to whom he intends to give the preference.
>
> The successful bidder may originally have quoted higher than you, and having the preference, has been permitted to meet your figures as you slid down.
>
> I therefore emphasize the point not to be too

> anxious about any particular job. If you cannot get it by legitimate methods, drop it and go on to something else. One swallow does not make a Summer. One job will not make or break your business."

Coming back to the question "How can we make the best of and improve present quiet conditions in the Paper Box industry?" The answer does not lie in watching your competitor and worrying over what he is doing or what you imagine he is doing. Nor does it lie in wild cutting of prices to stimulate business, as instead of stimulating, it will only result in the buyer holding further back.

> "And why beholdest thou the mote that is in thy brother's eye, but considerest not the beam that is in thine own eye?"

Is not the answer to be found in the direction of improvement in one's own methods in Factory, Office or Sales Departments; towards manufacturing economically, giving of better service, and finding new uses for Paper Boxes?

Coupled with a wide sense of vision which will view matters in the true perspective, recognizing that present conditions are but temporary, the Paper Box manufacturer in following such a line of policy will not have time to worry about his competitor, and when normal conditions arrive, the Canadian Paper Box industry will be at the high standard aimed at in the following objects, which I quote from the objects of the Association.

> "To raise the general standard of efficiency of those in the business, whereby the capital involved shall have a proper return thereon, the management shall be adequately rewarded, the wages paid and factory conditions shall be such as to attract a good class of labor, and to improve the quality of the product turned out."

PAPER BOX FACTORY FOR EDMONTON.

Through the efforts of the board of trade a new industry has been secured for Edmonton, Alta. The National Paper Box and Carton Co. with a main factory at Vancouver and a branch at Victoria have arranged for the Henningsen Dye Works building on 110A Avenue, and are rapidly putting the building in shape. A complete line of knock-down and set-up boxes will be manufactured, including a line of fancy candy boxes. The fibre board and other raw material will all be purchased in Canada, most of the material coming from the eastern provinces. About 50 people will be employed at the start.

CHICOUTIMI REFORESTING.

An extensive plan of reforesting its timber limits has been decided upon by the Chicoutimi Pulp Company. The company has obtained the services of the Quebec Forestry Department to make a complete survey of its timber reserves, and the best method of their exploitation. The outline of the project has already been adopted and the company has lately sent one of its employees to Europe, where he will study European methods on the ground and consult with the best-known practitioners in this field.

Mr. G. H. Mead, president, and Mr. P. B. Wilson, vice-president of the Spanish River Pulp and Paper Mills, were in Montreal last week. Another visitor was Mr. Angus McLean of the Bathurst Co.

THE HALF-TONE AND ITS WHIMS.

(From Special Bulletin No. 3, of the Canadian Pulp and Paper Association.)

You recall what the cynic said about women? That you can't live with 'em, and you can't live without 'em. If that is true half-tones must be feminine. We cannot well do without half-tones, but no printer has been able to live with them for any length of time without shattering the Fourth Commandment into ten thousand quivering fragments of explosive English.

Half-tones are as full of unexpected "kicks" as a jug of home-brew. Even with the most careful make-ready and the best of ink, the results are sometimes enough to make a conscientious printer weep and the customer rave.

"Unsuitable stock," says the foreman of one of the largest pressrooms in Canada, "is the most frequent cause of poor results when printing from halftones. This doesn't necessarily mean poor stock. The stock must be suited to the cut, if you want a satisfactory job. Of course, it isn't necessary to tell a printer that he can't use a 133-line-screen half-tone on newsprint or that a 120-line screen is usually best for general work.

"But to get the best results—plenty of detail and high-lights—we have to use ink that suits the cut. Different half-tones require different inks, and if the sizing of the paper isn't evenly laid and well brushed, the stock won't take ink of sufficient body to bring out the tones to the best advantage. Then we get a weak and washy half-tone."

The proper stock being chosen, the pressman has an opportunity to show his skill when he prepares his make-ready. Overlays must be carefully cut and placed so as to secure a deep, rich tone in the shadows, and clear, unsullied high-lights. The middle tones must be built up with overlays of various thicknesses to bring out all the values of the cut.

When soft tones and a wealth of detail are desired, it is well to use a screen as fine as 166-line. This, however, demands the highest-grade stock and printing under the very best conditions. 133-line is fine enough for good magazine and commercial work, while for use in the general run of catalogues and for trade-paper ads, it is unwise to attempt anything finer than 120-line. 60-line is best for newspaper work. If the 60-line screen is too fine for the stock specified, it is best to use line cuts rather than half-tones.

Whatever screen is used, it is well to remember, when selecting stock, that there is paper made in Canada to suit every requirement. Whether the job is the finest book work or a moderate-priced envelope stuffer, you need not go outside Canada to find a suitable stock.

Should you be uncertain as to just what stock to use on any particular job, look through the sample-books of any dealer in Canadian-made papers. If there's no sample-book handy, call up or write to your nearest dealer. He can give you better service than any foreign maker, and as for quality—prove to yourself through actual use that there is no better paper on the market than that made right here in Canada.

The concrete has been poured for the turbine for number seven unit in the Laurentide powerhouse and the generator foundation ring has been set. The number seven generator is expected in a couple of weeks. Parts for number eight unit are beginning to arrive, but none of the big sections have put in an appearance.

UNITED STATES NOTES

With the completion of one of five large units projected for the plant of the Waterway Paper Products Company, an Illinois Corporation, Chicago will soon see its first paper mill in operation. The cost of each of the four units remaining to be built will be close to a million dollars. The plant as it stands at the present time represents an outlay thus far of over $700,000. A 132 inch Black-Clawson Fourdrinier machine of latest type has been delivered at the plant. Walter A. Strong, who is associated with the Chicago *Daily News*, heads the company as president and general manager, and Emmanuel M. Mendelsohn will be vice president and treasurer. The concern's capitalization is as follows: $500,000 preferred stock, 10 shares common of no par value, and $450,000 in first mortgage bonds. Newsprint is to be the main product, though it is expected later to turn out some wall paper also. A contract covering a period of twenty years has been entered into with the Chicago *Daily News*, on a cost plus basis, whereby the Daily Company guarantees to purchase a minimum of 7,500 tons of newsprint annually from the mill. The total output is expected to total about 10,000 tons annually.

The House of Representatives Foreign Affairs Committee last Thursday favorably reported the joint resolution, already passed by the senate, for appointment of a commission to confer with the Canadian government relative to cancellation of the Canadian Order in Council restricting importation of pulp wood to the United States.

The New York State Conservation Commission in a summary of forest fire losses given out for publication last week, reports a damage of $37,555 in the State during last spring and an expense of $34,01 entailed in fighting the flames. This spring was shown by comparison with previous years to have been the worse for forest fires since 1903. In some sections of the Adirondacks, notably in the vicinity of Saranac Lake, where the rainfall continues insufficient, there is still considerable fire danger. The total number of fires reported this spring was 369, of which 299 were in the Adirondacks and 70 in the Catskills.

The United States Forest Service announces that the 100,000,000 cubic feet of spruce, cedar and hemlock covering a vast area of forest preserves north of Ketchikan, Alaska, has been purchased at a public sale by the Alaskan-American Paper Corporation of New York. The buyer, it is announced, has applied for power rights on Orchard Lake, and plans to erect pulp and paper mills here. The sale is one of the largest ever made of pulp timber on the Northwestern national forests.

Notwithstanding the protests of the workers, wage reductions amounting to 13 per cent for skilled men and 30 per cent for unskilled labor, went into effect last week in all paper mills of Southwestern Michigan. About 6,000 workers were affected, and the cuts will amount to about $2,000,000 a year. This is the second big pay cut for the past quarter. In May, the various mills clipped 16 2/3 per cent from the workers' wages, this reduction having been conceded by the workers without protest because it represented a war bonus payment made in May, 1920, intended especially to help them meet the then excessive cost of living.

The effects of the present business depression are being visited upon small investors in paper manufacturing establishments whose dividends have been either greatly reduced or passed altogether. This is shown to be the case in Southern Michigan and Northwestern Indiana, where a canvass of stockholders in eighteen paper manufacturing concerns shows that outside of possibly 100 capitalists, individuals of small means numbering about 2,000 hold securities as investors. Many of these are shown to be largely or wholly dependent on dividends from their stocks for sustenance. Hundreds of women and dependents are included in this smaller investing class. Some of those who feel it necessary to dispose of their holdings, find that there has been quite a shrinkage in the market value of their stock within recent months.

A break among the union workers of the International Paper Company has resulted in the opening of several of the larger mills of the company, which have been closed since May 1, when the men went on strike against the proposed reduction in wages. Within the past week thousands of skilled and unskilled workers, refusing to obey any longer the orders of the union leaders, have returned to work under the wage conditions proposed by the company on May 24. These terms represent a reduction of about 21 per cent as compared with the scale of wages existing up to May 1. The large plant at Niagara Falls is now running at full capacity, and the Montgomery mills at Turners Falls, Mass., is also running to capacity under the new conditions. At Berlin, NH., where several of the company's mills are located, some trouble is reported to have occurred when an attempt was made to import strike breakers. A clash between strikers and strike-breakers resulted in a score or more hospital cases. The move of the company was not to the liking of the Mayor, who ordered the strike-breakers to leave town. Damages done to the plant because of recent strike troubles, will probably cost company about $15,000.

A study made by the United States Forest Products Laboratory at Madison, Wis., by which it was sought to ascertain what chemicals would best serve to prevent pulp and pulp wood decay, has shown sodium fluoride to be in all probability the best disinfectant, with borax a close second. This conclusion is arrived at in a preliminary report just issued through the American Paper and Pulp Association. A more exhaustive and complete statement bearing on this vital matter will be issued in the near future. A report of mill trials at the plant of Price Bros. and Co., will soon be published in this Magazine.

As long as a man looks on his printing as overhead, he will buy the cheapest. When he realizes that it is sales and advertising literature he will buy the best.—Push

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Raw Materials for Papermaking. Ch. GROUD. **Papier**, xxiv, 18 (Jan. 1920). Description of various species of **mulberries (Broussonetia)**, and other Moraceae, and of various species of Malvacea, together with a detailed description of the method of making paper by hand from the bark of the paper mulberry in Japan.—A. P.-C.

A-3. Bamboo as Papermaking Material. Ch. GROUD. **Papier** xxiii, 298-301 (Dec. 1920). A description of various species of bamboos, of the manner in which some of them can be cultivated in the South of France, and of their treatment in the manufacture of paper pulp. The stems are cut diagonally into disks 2-3 Cm. thick, the nodes separated, the remainder crushed, cooked for 3 to 4 hours under a pressure of 3 Kg. with 8 to 10 percent of caustic soda, washed, defibered, and bleached. Bleaching wih chlorine does not yield as white as fiber as electrolytic bleach (sodium hypochlorite) or potassium permanganate. The yield is usually about 45 per cent. The pulp may be used either alone or in combination with rag stock for the manufacture of semi-fine, fine, and de luxe papers. When used alone it can be made into very thin and fairly strong onion skin papers.—A. P.-C.

A-3. Bagasse for Papermaking. C. J. WEST. **Paper Mill**, xliv, 12, (March 19, 1921). A general review, based on a bulletin of the Hawaiian Planters' Association. C. J. W.

A-3; K-6. Papyrus and Grass Pulps. French patent 507,773, MAURICE AUGUSTE PIHOUEE, France, (Seine), March 21, 1920. **Papeterie**, xlii, 1124-5 (Dec. 25, 1920); **Papier**, xxiii, 303-4 (Dec. 1920). The raw grass is steeped in water, cut into pieces of a suitable length, pressed to express the excess water, and then treated in an autoclave with hot water under pressure. The fibrous material thus obtained is pressed into bales and shipped to the pulp and paper mills where it can be subjected to the usual treatments for the preparation of pulp and paper.—A. P.-C.

A-11; K-9. Carbonates of Magnesia in Papermaking. Papeterie, xlii, 1021-2 (Nov. 25, 1920); 1065-9 (Dec. 10, 1920); 114-8 (Dec. 25, 1920). Commercial carbonate of magnesia is a basic hydrocarbonate, the composition of which varies according to the conditions of precipitation (temperature and time of boiling). Three carbonates are known. (1) $3CO_2.4MgO.4H_2O$ (Wurtz); (2) $4CO_2.5MgO.5H_2O$ (Fristzche); (3) $5MgCO_3.2Mg(OH)_2.7H_2O$ (Carré; **Précis de Chimis Industrielle**). In the manufacture of cigarette papers it is important that the ash be high, and for this purpose (1) is most suitable. It also possesses the advantage of being the lightest of the three, and hence it is more easily incorporated into the pulp and is more readily retained in the finished paper. Methods of determining the "apparent density", the composition of the carbonate, and the impurities which may be present are described in detail.—A. P.-C.

A-15. Action of Dilute Mineral Acids on Cellulose. A. WOHL and K. BLUMRICH. **Z. angew. Chem.** xxxiv, 17-18 (1921). The insoluble residue (hydrocellulose) remaining after prolonged heating of cellulose with dilute acids is of the nature of a reversion product rather than an intermediate degradation product; such residues are often more resistant to hydrolysis than the original cellulose and unsuitable for fodder owing to their indigestibility. It is concluded that the reducing sugars, which pass into solution during the hydrolysis, interact, on continued heating, with the residue in the colloidal phase, and form reversion products.—C. J. W.

A-15. Action of Hydrogen Peroxide on Cellulose. R. HALLER, **Text.-Forschung**, ii, 79-84 (1920); **Chem. Zentr.**, xci, 4, 543-4 (1920); **J. Soc. Chem. Ind.** xxxix, 817A (Dec. 31, 1920). Most vegetable textile fibers are disintegrated by the prolonged action of 30 percent hydrogen peroxide and eventually dissolved with formation of dextrose. A cellulose peroxide which reacts characteristically with potassium iodide is formed as an intermediate product. The disintegration of the fibers is accelerated by certain cotton dyes and retarded by others. Cotton mordanted with chromium oxide is very rapidly broken down, whilst the simultaneous presence of aluminum has a retarding effect. It is possible that impregnation of laundry goods with alumina may protect them from injury from detergents containing hydrogen peroxide.—A. P.-C.

A-15. Pulp Evaluation as Affected by the Fiber Ratio in the Test Sheets. C. L. BATCHELDER. **Paper Industry**, 10, pp. 1555-1563 (1921). The fiber direction is the controlling factor in the strength test. Before a sheet can be called uniform, the fibers must be uniformly distributed. Such a condition cannot be obtained when the hand mold is manipulated as under the present method. The suction mold eliminates many of the undesirable factors and the result is a sheet more nearly perfect than can be made by any of the other methods described.—C.J.W.

A-16. Acid Resisting Alloy. Fr. patent 501,870. K. EENBERG, France, Feb. 7, 1920. **Chimie et Industrie**, v, 51 (Jan. 1921). This alloy, called Maridal, is a complex chromo-manganic brass, having a high tensile and transverse strength and great resistance to shock. It is tough, elastic, and acid-resistant. Its composition may vary between the limits Cu 54 to 58.5%; Zn, 34 to 30%; Cr, 0.5 to 4.1%; Mn, 0.5 to 3.6%; Fe, 0.5 to 2%; Al, 0.4 to 1%; Ni, 0.3 to .05%; copper phosphide (15%), 0.3 to 0.08%. The manganese is first added to part of the molten copper and after the addition of a further amount of copper the chromium, nickel, zinc and iron are added in the order named. The aluminum is added in several successive portions before the addition of each of the other constituents, and the phosphorus is added just before casting.—A. P.-C.

B-4. The House that Jack Pine Built. Paper Mill, xliv, 12 (March 19, 1921). Jack pine is suitable wood for newsprint paper.—C. J. W.

B-4. Waterproofing Wood and Recovery of Liquid Products. Fr. patent 493,557, C. ROY, France, May 5. 1919. **Chimie et Industrie**, v, 66-7 (Jan. 1921). Cold water (or water heated to a certain temperature) is injected into the unbarked wood, thereby driving out the sap and other liquids such as resins, oils, and albuminoid bodies. The waterproofing is complete by precipitating out the casein. The driving out of the sap and its replacement by casein renders the wood resistant to the action of the heat, water, and light, prevents it from warping, and makes it very easy to glue. Moreover, the liquids which were driven out of the wood can be utilized.—A. P.-C.

B-9. The Snell Forestry Bill.—Paper Industry, ii, 10, pp. 1575-1579 (1921). Proceedings of the hearing before the House sub-committee.—C.J.W.

C.-5.—Artificial Fog as Fire Prevention. F. J. HOXIE. **Paper Industry,** ii, 10, pp. 1540-1541 (1921). **Paper,** Dec. 15, 1920, and Pulp & Paper, Jan. 6, 1921.—C.J.W.

C-6. Saw Filing Machine. Can. patent 207,667, FRANK PYSZ, Taunton Mass., U.S.A., Jan. 18, 1921.—A. P.-C.

E-2. Sulphite Waste Liquor Utilization. J. G. VARLOT. **Papier,** xxiii, 281-4 (Dec. 1920). A brief review of various uses for sulphite waste liquor: binder for roads and briquetted fuels, tanning extracts, fuel, and ethyl alcohol.—A. P.-C.

E-5; F-5. Removing Fibrous Materials from the Bottom of Digesters. W. M. WALLACE. English patent 156,025. March 10, 1920.—C.J.W.

E-5; F-5. Pressure Lock for Digesters. Can. patent No. 207,708, AKTIEBOLAGET VAPORACKUMULATOR, Stockholm, assignee of JOHANNES RUTH, Djurshelm, both in Sweden, Jan. 18, 1921. A pressure lock in digesters to prevent the liquid contents of the digester from flowing back at a lower pressure in the steam conduit, consisting of a pipe opening into the steam conduit between the cut-off valve of the digester and another valve, preferable a non-return valve, the said pipe communicating with steam, air, water or other pressure medium of higher pressure than the maximum pressure of the digester.—A.P.-C.

G-11. Pulp Reclaimer. C. S. BIRD. English patent 146,891. July 6, 1920.—C.J.W.

E-0. Extraction of Cellulose from Ligneous Material. R. HARTMUTH. German patent 326,705. July 9, 1919. The raw material is heated with phenols, or substances having a phenolic character, in a concentrated form diluted with water, alcohol, benzene, benzene derivatives, or aliphatic hydrocarbons, in the presence of a catalyst. A suitable catalyst is 0.01 per cent hydrochloric acid. The lignin combines with the phenol to form a soluble substance, which may be used as an adhesive, lacquer or the like, while the cullulose remains white and unchanged.—C.J.W.

E-0. Extraction of Cellulose from Wood. W SCHLOSSER. German patent 328,729. Sept. 27, 1919. The raw material is treated either hot or cold with primary and secondary aliphatic and aromatic amines, either alone or diluted with alcohol or benzene, etc. The reaction proceeds more rapidly in the presence of a condensing agent such as hydrochloric or zinc chloride.—C.J.W.

E-0. Process for Recovery of Cellulosic Materials. R. SCHWARZKOPF. German patent 328,730. Sept. 27, 1919. The raw material is treated either hot or cold with acid chloride, such as sulphuryl chloride, thionyl chloride, phosphorus oxychloride, acetyl chloride, benzoyl chloride, etc., which may be diluted with indifferent solvents, such as benzene and carbon tetrachloride. In cases where the acid chlorides do not dissolve the noncellulosic substances directly the cellulose may be purified by an after-treatment with alkali.—C. J. W.

F-4. Extracting Soda Salts from Black Ash. GEO. M. TROSTEL. **Paper Industry,** ii, 10, pp. 1563-1565 (1921). The black ash is crushed and mixed with weak liquor so as to be handled with an open impeller centrifugal pump. This is then ground in a tube mill and discharged into receiving tank provided with agitator and mixed with more liquor, which is then lifted with a centrifugal pump, caused to pass through an 18-mesh screen and then onto a rotary suction filter, the filtrate of which will be entirely strong liquor. The filter cake is mixed with hot water and fed to a second rotary suction filter, giving a weak liquor of about 0.7 degree Bé. The process is continuous, the volume of liquid to be handled reduced and better control is secured.—C.J.W.

G-5. Centrifugal Pulp Thickener. Can patent 207,628, JULIUS T. JAEGER, Iroquois Falls, Ont., Canada, Jan. 18, 1921. A centrifugal pulp thickener, comprising a rotatable tabular member flaring outwardly at the discharge end, means for conducting the pulp from the inner perimeter of the tubular member, and a centrally located means for conducting the waste water from the tubular member.—A. P. C.

G-6. Screening and Filtering Apparatus. Can. patent 207,705, HAROLD DONALD WELLS, Glens Falls, N.Y., U.S.A., Jan. 18, 1921. In an apparatus of the type described, a box provided with spaced transverse partitions, a screen extending into the said box and provided at the under side with spaced transverse partitions on the box and screen forming suction and pressure compartments underneath the screen above the box partitions and forming water sealing compartments in the box, and means imparting a rising and falling and a longitudinal oscillating motion to the said screen.—A. P. C.

G-11. Decantation Apparatus. (Save all). Can. patent 207,600, JOSEPH DENGEL, Lanbeq, Belgium, Jan. 18, 1921. A decantation apparatus comprising an inverted funnel placed in a casing, means for evacuating continuously a current of the heavier portion of the liquid at the bottom of the casing, means for discharging a current of the clear liquid at the upper end of the casing, said casing being of conical shape so that the lowest velocity reached by the liquid at the bottom of the funnel is maintained during the ascending movement of the clear liquid between the funnel and the casing.—A. P. C.

K-3; K-6. Ram for Filling Digesters. M. ARGY et H. LHOMME. **Papeterie,** xliii, 117 (Jan. 10, 1921). In filling a digester with a bulky material such as straw, esparto, etc., it is necessary to fill the digester as completely as possible, as the steam and liquor consumption and the labor are the same irrespective of the amount of material charged into the digester. This result is sometimes obtained by tamping down the straw by hand; but this is inefficient and slow. Various types of mechanical rams have been developed but they are all based on the same principle, viz., a heavy weight is raised and allowed to fall through the charging hole on to the material being located into the digester. These are used to a large extent in Holland and Germany; and it is considered that 25 to 30 percent more straw can be loaded into the digester in this manner than by tamping down by hand.—A. P. C.

K-6. Treatment of Waste Printed Paper. Can patent 207,594, CHARLES T. CROCKER, Fitchburg, Mass.

(Continued on page 770.)

PULP AND PAPER NEWS

Pressmen and press assistants, lately on strike in Toronto, have been seeking their former jobs at $36 a week for a week of forty-eight hours. This was the last offer of the employers during the negotiations which were termintead by the strike on the 8th June, and the wages represent eighty cents a week more than the men were earning when the strike took place. However, a certain number of them cannot be given back their positions, though the employers state that they are endeavoring to hire as many of those lately on strike as possible.

With regard to the strike of the compositors, the Toronto Typothetae and the Toronto members of the Canadian National Newspapers and Periodicals Association have leased a flat on Adelaide Street, Toronto, for the purposes of a school for printers. Equipment has been ordered, and the school should be in full swing by the time these lines are in print. The apparatus includes monotype equipment, including five keyboards, and four casters, with matrices, molds, etc. Five linotype machines are also included in the equipment, and type, cabinets, racks and galleys have been assembled. The idea is to have the students spend half their time in the school and the other half in the shops of the Typothetae. This will enable sixty students to be passing through the school, which has accommodation for thirty pupils at one time. A fixed educational standard is being demanded, as the employers take the view that printers should have, at the very least, a high school education. They believe that a high standard of education will be beneficial to the industry and the printer alike. Great interest is being taken in this school, and quite a surprisingly large number of applications to join it have been received from men and women who are anxious to learn the printing trade. The cost for a course at the school is $50, to be paid by the pupil or employer, and, if it is kept supplied with its full complement of pupils, the school should be self-supporting. The establishment of this school is of great significance, as it is obviously based on the assumption that the compositors' strike is incapable of settlement and that, in the view of those who belong to the Typothetae, it is time a new order of things was ushered in.

Pulp and paper companies operating in Northern Ontario resent the statement of the Fire Inspector of Cochrane, Ont., criticizing owners of pulpwood on the T. and N.O. railway sidings for failure to cooperate in protecting the piles from bush fires. The Inspector, however, claims that his criticism was directed principally at owners of pulpwood which is awaiting export, and thousands of cords of which have been burned without effort on the part of its owners to save it. While on the question of fires, by the way, it must be admitted that the Province of Ontario is not doing its full duty as regards the protection of its forests. It is largely in consequence of its neglect of this duty in this respect that the havoc-making fires, of which we have lately had such disastrous examples, do such appalling damage over such large forest areas every year.

Messrs. James J. Freel and Charles A Summer, respectively vice-president and secretary-treasurer of the International Stereotypers' Union, were in Toronto last week, making arrangements for the convention of the Union, which commenced its session in the Prince George Hotel, Toronto last Monday. In the course of an interview Mr. Freel reviewed the situation and defended the action of the printing trade unions. Mr. W. A. Sutherland, secretary of the Toronto Typothetae, issued a reply to this defence in the course of which he claims that the organization of the United Typothetae of America is not bound by the action of a minority of its members acting as a closed shop division. He asserts that the United Typothetae of America is prohibited by its constitution from dealing with Labor matters; and that the local Typothetae has sole jurisdiction in this regard, and adds that the United Typothetae of America, at its conventions in 1919 and 1920, went on record as condemning the action of certain of its membership in connection with the forty-four hour week. "As far as we can learn," Mr. Sutherland concludes, "only one per cent of the printing plants ofthe United States have granted the forty-four hour week. The remainder never promised, or agreed to, the forty-four hour week, and are operating their plant on a forty-eight hour week.

At their meeting on Wednesday night of last week, in the Methodist Book Room, Toronto, employing printers of the Toronto Typothetae adopted the following resolution: "That the Defence Committee recommend that no member patronize any plant operating on the forty-four hour basis and conceding Union demands." The Secretary of the Toronto Typothetae, when questioned as to what prompted the passing of this resolution, preserved a non-committal attitude, but it is obvious that its intention is to put the forty-four hour shop under the ban of a business boycott.

A party representing the Backus interests reached Winnipeg last Friday from Kenora en route for International Falls. The party included Mr. E. W. Backus, Mr. D. McLeod, general manager of the Keewatin Lumber Company, and Capt. George Macpherson. "Only the water is now required to go ahead with the big developments at Kenora," stated a member of the party. "Everything is ready. We've got the timber limits and everything. All that is wanting is the water."

The Provincial Paper Company is constantly making extensions and improvements to its various plants. This week it expects to start a new steam boiler plant at its Mille Roches plant. The equipment installed includes three 250 H.P. water tube boilers with stokers and other apparatus. The Company is also putting in a new water system at Port Arthur. Heretofore, the city has supplied the water, but, as it can no longer do so in sufficient quantities, the Company has decided to install its own system. This water system will be of sufficient capacity to supply the new paper mill which Provincial contemplates building as soon as conditions warrant. At Thorold, the Company has just completed the addition of one storey to the finishing room of its plant there, and has also completed the new concrete floor in its No. 1 beating room.

At the first meeting of the new Executive of the Quebec division of the Canadian Manufacturers' Association held in Montreal, last Friday, strong expression was given to opinion in favor of the establishment of a Canadian Research Institute, and in favor of the legislation necessary to secure funds for the establishment and maintenance of the organization, and representations along these lines will be made to the acting Premier, the Rt. Hon. Sir George Foster.

Dr. John S. Bates, formerly superintendent of the Forest Products Laboratories, Montreal, is at Bathurst, N.B., doing some special chemical engineering work in connection with the pulp mill of the Bathurst Co.

Mr. Edward Beck,author of the interesting current series of articles on Forestry in Scandinavia, for which he made a special trip to Europe, is now on his way home.

As a result of playing good baseball on July 10th the Grand Mere team beat Three Rivers 3-0 and tied the latter for first place in the St. Maurice Valley league.

Major Clement King, M.C., of the International Mill at Three Rivers, was prevented by illness from commanding his batting at field practice at Petawawa.

Mr. J. D. Mason's new house at Grand Mere was in danger last Sunday when fire, believed due to spontaneous combustion, broke out in a pile of loose lumber. Thanks to Sunday golfers the fire was put out before any serious damage was done.

Mr. William Carter, who is in charge of the pulp and paper machinery department of the Canadian Ingersoll Rand Co. is on a business trip to the pulp and paper mills in Newfoundland.

There is a persistent rumor that the old paper mill at Hartsville, N.S. is to be reorganized and put in operation by Halifax interests. We understand that at the present time there is no paper machine running in this province.

MR. DELVAUX GOING TO BELGIUM.

Mrs. V. Delvaux and children are sailing from Montreal July 23rd on the Scandinavian for Belgium where they intend to reside in future Mr. Delvaux joining his family in November. It is with sincere regret that we intimate the departure of Mr. and Mrs. Delvaux. The former has acted in the capacity of Works Engineer for the Belgian Industrial Co. During Mr. Delvaux's tenure of office extensive additions and many important alterations have been undertaken and successfully completed to the plant and buildings of the company and much credit is due Mr. Delvaux for construction and efficiency which has so greatly increased the output of all departments and has placed the mills of the Belgo Company in the front ranks of the paper and pulp companies of which this country has reason to be proud as well as grateful to those responsible for their rapid development amongst whom Mr. Delveaux may be numbered. —Three Rivers "Chronicle."

LOOKS LIKE MORE PRINTING.

Although the hot summer months are not particularly busy ones in most lines of business, the weekly output of the Mergenthaler Linotype Company continues to reflect a healthy condition of things in the printing and publishing fields.

In the first week in July fifty linotypes were shipped, among them a model 24 machine, the latest model of multiple magazine linotypes.

ONTARIO TIMBER LIMIT SOLD.

The Transcontinental Development Company was the successful tenderer for the Nagagami pulp and timber limit recently, put up for sale by the Ontario Government. It contains an area of 2,300 square miles. Under the terms of the contract the company is to spend $1,000,000 on a pulp mill, with a daily output of 100 tons and employing 200 persons. The sum of $200,000 is to be spent the first year, $350,000 the second year and the balance the third year. A paper mill with a capacity of seventy-five tons a day will be erected when and where ordered by the Minister of Lands and Forests.

SWEDISH MILLS ACTING INDEPENDENTLY.

Cablegrams from Sweden to New York are reported to this effect that minimum prices on sulphite and kraft pulps established by the Swedish Cellulose Association have been abolished, and that members of this organization were now endeavoring independently to market pulp at whatever prices could be secured. These advices supplemented mail advices previously received to the effect that the price agreement might be abrogated on July 1 owing to the situation that has developed in the pulp industry in Sweden, where it is understood producers have large stocks of pulp which they are having much difficulty in finding an outlet for. This development was viewed by local importers as explaining the sharp reduction in quotations named in offerings of pulp from Sweden during the past few days, and some frankly stated that they would not be surprised to see a merry war result among the Swedes in an effort to market pulp in the United States, such as has existed at intervals in the past.

MORE POWER FOR ESPANOLA.

The International Nickel Company, Copper Cliff, has secured contract from the Spanish River Pulp and Paper Company for the supply of electric power to the paper mills at Espanola, at the rate of 3,000 to 5,000 horse-power daily. The Nickel Company will develop this power on the Spanish River, at High Falls, where they recently completed the big Eddy Dam, built at a cost of $3,500,000. This contract calls for the erection of a 60-cycle current plant, costing approximately $150,000, to be built by the International Nickel Company.

FULFIL PROMISES OR FORFEIT LIMITS.

According to Premier Drury, speaking to Port Arthur citizens last week, the Great Lakes Pulp and Paper Co. is under threat of losing its Black Sturgeon timber limits near Nipigon, if it does not fulfill its promises for development before Jan. 1, 1922. "If the Company cannot live up to the terms of agreement then the limits will be turned over to someone else who can," said the Premier.

Did you ever notice that the man whose stock in trade is brains always has a funny looking sample case? But he can deliver the goods.

The faultfinder is rarely a pathfinder.

When Service and Quality keep house together, Satisfaction hangs up its hat for a long stay.—Paragrafs.

(Continued from page 667.)

U.S.A., Jan. 18, 1921. In the manufacture of paper, the process of subjecting a continuous stream of pieces of waste paper to the action of a hot alkaline solution, by causing each oncoming piece of paper, as nearly separate as is possible, to be submerged in and moved through said solution to facilitate the exposure of its surfaces to the action of said solution, for the purpose of cutting, removing or neutralizing the ink or other material fixed to said surface, and by not only removing said pieces of paper from said solution, but also by depriving said pieces of paper of most of said solution, and exposing them to the air to cool preparatory to being treated in a washing machine.—A.P.-C.

K-6. Removing Ink from Waste Paper. Fr. patent 508,153, Newsprint Reclaiming Corporation, July 17, 1920. **Papier,** xxiv, 22-4 (Jan. 1921). A trough is placed across the width of the beater and extends from the midfeather to the edge of the vat. It consists of a vertical solid metal plate or wooden board and of a perforated metal plate or screen placed at an angle of about 45° to the other one. The trough contains a spray pipe and an outlet. As the beating of the waste paper proceeds, the mineral oil which served as a vehicle for the ink rises to the surface, carrying with it the particles of ink. As the stock comes against the screen, it is deflected downwards and passes under the trough, while the oil and ink pass through the screen and are removed through the outlet. The spray may be used either continuously or intermittently to keep the screen clean.—A. P.-C.

K-10. Paper Size. Can. patent 207,599, JUDSON A. DECEW, Montreal, Quebec Canada, Jan. 18, 1921. A method of incorporating resin size into paper stock in beaters or mixers without having it coagulated by earth salts which may exist in solution which consists in adding a sufficient quantity of alkali so that the concentration of the basic ions will prevent the formation of earth resinates, then adding a resin size and finally precipitating with aluminum sulphate.—A.P.-C.

K-11. Papermaking Machines. Process Engineers, Inc., English patent 145,440. June 18, 1920.—C.J.W.

K-11. Sectional Paper Machine Drives. H. W. ROGERS. **Paper Mill,** xliv, 16. Developments by the General Electric Company.—C. J. W.

K-11. Stock Consistency Regulator. Fr. patent 508,191, WILLIAM P. FEENEY, U.S.A., July 19, 1920. **Papeterie,** xlii, 1121, 1124 (Dec. 25, 1920); **Papier,** xxiv, 24-5 (Jan. 1921). Same as U.S. patent 1,331,957, Feb. 17, 1920, and Can. patent 200,741, June 8, 1920.—A. P.-C.

K-11. Prevention of Foam on Dandy Rolls. Fr. patent 509,845, Kangas Pappersbruks Aktiebolag and Onni Suursalui, Feb. 12, 1920. **Monit. Papeterie,** lvii, 1, 19 (Jan. 1, 1921). A narrow strip of felt is made to rest along the whole length of the roll and a spray of water is directed against the surface of the roll from the inside so as to strike against the felt. The water is evacuated through the journals by means of a drain inside the roll.—A. P.-C.

K-11. Papermaking Machine. Can. patent 207,607, PIERRE GELINAS, Grand Mère, Quebec, Can., Jan. 18, 1921. A. P.-C.

K-11. Improved Dandy Rolls. Fr. patent 509,196, WALTER KNOWLES TROTMAN, England. **Papier,** xxiv, 25-7 (Jan. 1921); **Papeterie,** xliii, 62-4 (Jan. 25, 1921).—A. P.-C.

K-14; R-4. Economy of Standardized Paper Sizes. N. J. WERNER. **Paper Mill,** xliv, 16.—C. J. W.

K-17. Paper for Banknotes and Bonds. French patent 505,373, CHARLES-ANDRE COPPIER, France. **Papeterie,** xliii, 64-9 (Jan. 25, 1921). The paper is subjected to great pressure in contact with a metal stencil or a sheet of metal having a suitable design engraved on it by one of the usual engraving processes. —A. P.-C.

K-18. Better Grades of Straw Board. RICHARD CLAYTON **Paper Industry,** ii, 10, pp 1540-1541 (1921). Uniformity in rotary cooking is very essential. Three bushels of lime to a ton of straw, enough water to keep the lime from burning the straw, and ten hours rolling and cooking at 40lb steam pressure prepares the raw material for the stock pit. In beating the roll should be half an inch from the plate for the first ten or fifteen minutes to straighten out the straw; the roll is then gradually lowered until it just brushes the plate. The stock is then passed through a jordan and finally through a No. 35 screen. The board should be dried slowly.—C.J.W.

K-20. Manufacture of Parchment Paper. C. G. SCHWALBE. German patent 303,305. June 23, 1917. Before being made into paper the raw material, such as cellulose, halfstuff, woodpulp, etc., is treated in the edge runner or in the hollander with oxidizing agents, such as oxides of nitrogen, permanganates, peroxides, perchlorates or perborates. By this means parchmentisation is effected and a product of increasing tenacity is obtained.—C.J.W.

K-22. Manufacture of Cigarette Paper. Zellstofffabr. Waldhof. German patent 327,735, Nov. 29, 1917. Sulphite pulp to be used for the manufacture of cigarette paper is treated with alkalis whereby its unpleasant taste is removed.—C. J. W.

K-23. Machine for Making Marbled Paper. French patent 507,419, RICHARD-JOSEPH WEBB, England, June 21, 1920. **Papier,** xxiii, 302-3 (Dec. 1920).—A. P.-C.

K-23. Treatment of Paper or Fabrics for Electrical Apparatus. Fr. patent 502,701, P. BARNIER, France, Feb. 26, 1920. **Chimie et Industrie,** iv, 796 (Dec. 1920). The paper or fabric is impregnated, in an autoclave containing a suitable set of reels, with a boiled, oxidised, and specially purified oil, together with a solvent. The excess liquid is recovered and the material is dried by hot air in a long and suitably ventilated tunnel. The apparatus is so designed that the whole treatment is carried out without contact with the air or with dust. —A. P.-C.

K-23. Paper Reinforcing Machine. Can.. patent 207,627, PATRICK TRACY JACKSON, Cambridge, Mass., U.S.A., Jan. 18, 1921. A machine for reinforcing paper fabrics by enclosing between two superposed fabrics transversely and longitudinally extending unspun fibers, comprising, in combination, means for feeding two paper fabrics, means for feeding a sheet of fibers in unspun condition in transverse relation to said fabrics, means for feeding another sheet of fibers in longitudinal relation to said fabrics, and means for adhesively uniting said fabrics with the unspun fibers between them.—A.P.-C.

L-4. Container. Can. patent 307,739, The Stokes & Smith Co., Philadelphia, Pa., assignee of JOHN STOGDELL STOKES, Moorestown, N.J., both in U.S.A., Jan. 18, 1921.—A.P.-C.

L-7. Textile Threads from Wood. FRANK. **Papeterie,** xlii, 1106-13 (Dec. 25, 1920); xliii, 9-13 (Jan. 10, 1921); 50-4 (Jan. 25, 1921). So called paper thread is not a true textile thread, but rather a very fine twine, and the fabrics made from them are plaited rather than woven. Artificial silk, like true silk, is a non-fibrous thread; while the ordinary textile threads, such as cotton, flax, etc., consist of relatively long fibers spun and twisted to form a thread. The researches of Francis Beltzer have proved the possibility of the synthesis of cellulose fibers but in spite of the wonderful results obtained it is probable that cellulose fibers will be obtained industrially from the natural wood fibers rather than from the synthetic product. A few of the general principles of the structure of plants and trees are briefly reviewed to show in what direction researches must be undertaken to arrive at the desired result, which is the isolation of the fibrous network of the tree, and not of the ultimate cellulosic fibers.—A. P.-C.

L-7. Impregnation of Paper-Yarn Fabrics. O. RUFF, German patent 327,399. Oct. 27, 1917. Fabric impregnated with a phenol, such as cresol, formaldehyde, and an alkali, is heated in an atmosphere containing carbon dioxide. The change of the caustic alkali to carbonate is favorable to the formation of the water-insoluble phenol-formaldehyde condensation product, and both the dry and wet strengths of the fabric are increased. —C.J.W.

M-9. Handling of Pulp Bales. Monit. Papeterie, lviii, 61-4 (Feb. 1, 1921). A description of the equipment (travelling cranes and hoists) used at the Essonnes mill of the Papeteries Darblay for handling pulp from the cars to storage and from storage to the paper mill.—A. P.-C.

M-0. A New Weightometer for Soft Stock, Chips and Acid. E. J. TRIMBEY. **Paper Mill,** xliv, 16, and **Paper Trade Journal,** lxxii, 16. Description of the new Allen weightometer for weighing chips, soft stock, etc. —C. J. W.

M-0. Bituminous Lining for Surfaces Exposed to Corrosive Action. Can. patent 207,711, The Barber Asphalt Paving Co., Philadelphia, Pa., U.S.A., Jan. 18, 1921. A bituminous composition for use as a protective coating for surfaces exposed to the action of corrosive fumes of liquid, containing about 15 to 35 parts of asphaltum free from calcareous material, fine noncalcareous mineral particles smaller than 0.1 in. about 25 to 50 parts, and coarse mineral particles of igneous rock larger than 0.1 in. about 30 to 45 parts.—A.P.-C.

M-0. Grinding Apparatus. Fr. patent 135,085. RENE-FRANCOIS-XAVIER DESTAINVILLE and JEAN LAMASSIAUDE, Oct. 14, 1920. **Papeterie,** xliii, 69-70 (Jan. 25, 1921.) Material such as grain, soft stone, sand, earth, etc., and more particularly fibrous materials such as are used in the manufacture of pulps, papers, guncotton, etc., are crushed between two hyperboloids of revolution which are tangent to, and rotate against, each other.—A. P.-C.

O-2. Sand Filter. Can. patent 207,574, NEIL McKECHNIE BARRON, New Beckenham, Kent, England, Jan. 18, 1921. A sand filter comprising in combination a sand chamber, an inlet for sand and an inlet for unfiltered water at the top of said chamber, a plurality of filter tubes within said chamber each comprising a pair of co-axial perforated tubes with a sand layer disposed between them for filtering the water, means for spraying water under pressure on the outer surfaces of the outer tubes aforesaid for the purpose of cleansing those surfaces, sand excluding outlet means for filtered water at the bottom of said chamber wherecleansing those surfaces, said excluding outlet means by the sand can be finished out for cleaning purposes. A. P.-C.

O-3. Purification of Boiler Feed Water. G. PARIS. **Chimie et Industrie,** iv, 722-30 (Dec. 1920). A discussion of the continuous blow-off method of water purification, together with a discussion of its merits. — A. P. C.

O-3. Purification of Water for Industrial Uses. NOEL ADAM. **Publications Techniques,** iii, 7-9 (June, July, August, 1920). Detailed description of the Gail and Adam apparatus for the continuous treatment of water (lime and soda ash being taken for the particular case described) for industrial purposes and of its method of operation, together with examples of the nature and quantity of purifying reagents required for the treatment of various industrial waters (waste liquors from bleacheries, straw pulp mills, starch factories, dairies, forges, pyroligneous acid plants, dyeworks, etc.)—A. P.-C.

R-1. The Paper Industry in 1920. Paper Mill, xliv, 16. Review by months of the most important events of the year.—C. J. W.

R-5. Australian Paper Industry. Papier, xxiii, 228-9 (Dec. 1920). A brief review of the present status of the industry and of its dependence on foreign sources for its raw materials. A. P. C.

R-5. British Trade in Pulp and Paper During 1920. Pulp and Paper, xix, 135-7 (Feb. 3, 1921). General review of the conditions prevailing on the English pulp and paper market during 1920.—A. P.-C.

R-11. Committee on Education. Progress report on the work accomplished on the textbooks since the last convention, from **Pulp & Paper,** Jan. 20, 1921.—A.P.-C.

R-11. Progress of U. S. Paper Laboratory in 1920). Report of the director of the Bureau of Standards concerning the work of the Paper Laboratory during 1920. The paper testing laboratories and experimental paper machine have been moved to new quarters in which a large room has been equipped with a conditioning apparatus for maintaining 65 per cent relative humidity and 70° Fahr. temperature. New equipment has been obtained consisting of a 300-pound concrete beater with necessary and stuff chests, a larger screen, a sheet cutter, and a supercalender. During the year the following problems were studied: tearing strength of paper, paper for lime and cement bags, substitute for sand bags, determining the sizing quality of paper, preparation of samples for the microscopic estimation of fiber content in papers, identification of sulphate pulp, preparation of samples for the microscopic estimation of fiber content in papers, identification of sulphate pulp, preparation of photomicrographs of a set of samples of authentic papermaking fibers, study of the methods and technic used in the microscopy of paper fibers and the proper use of the necessary instruments and apparatus, study of the suitability of various fibers for papermaking, production of mineograph paper with the papermaking equipment of the laboratory, preparation of specification for lime to be used for cooking rags to be used for papermaking. During the year a total of 4,362 samples of paper were tested, of which 3,090 were submitted by government departments and 1,272 by public and private interests. A large amount of miscellaneous information in regard to the testing and manufacture of paper has been given through correspondence and conversation with visitors.—A. P.-C.

R-11. The Care of Rubber Articles. Papeterie, xlii, 930 (Oct. 25, 1920); **Paper,** xxvii, 21 (Jan. 26, 1921). Hints on the proper method of caring for soft rubber articles.—A. P.-C.

CANADIAN TRADE CONDITIONS.

Toronto, 16th July. During the past week certain branches of the paper trade have evinced an increased activity. Pretty generally, however, the complaint still continues to be heard that the demand is too "spotty" and the buying only for immediate requirements, so that orders, in the aggregate, are for less than what may be regarded as the normal volume. There has been little, if any, relief in the trade depression prevailing almost universally, and, as a consequence, consuming industries generally are using far less than the customary quantities of paper, while this same trade depression continues to be reflected in a tremendous decrease in the total volume of advertising which, in its turn, results in a decreased use of certain lines of paper. Meanwhile, the strike of the Toronto compositors still continues, with little prospect of an agreement being reached. Each side still professes confidence in its ability to prosecute the struggle to a successful issue, and—what is equally significant—confidence in the equity of the course it is taking in the matter. However, as has been indicated before in these columns, the concensus of opinion, in business and commercial circles, is that the strike will "peter out." It may, of course, be said that, in this view, "the wish is father to the thought." But that the view is very widely entertained is unquestionable.

On the whole, the paper market is at present in a condition far removed from normal

PULPWOOD.—Many of the mills report that they have large stocks of pulpwood still undisposed of. But it does not seem likely that there will be much market activity until both the extent of probable production and the possibilities as to prices have been more definitely ascertained. Pulpwood prices have undoubtedly taken a little journey on the toboggan since last winter, but prices are still unsettled, particularly as regards spruce and balsam.

NEWSPRINT.—Trading in newsprint still continues fair, for reasons that have been given lately. There have been no recent changes of any note in prices.

WRAPPING PAPERS.—Business in wrapping papers generally is somewhat slow, and the improvement which the autumn season is considered likely to bring will be very welcome. The business in Kraft wrapping paper is better than that in other lines. Kraft wrapping paper has undergone a reduction in price of 1¼ cents a lb. That is to say, it has been reduced in price from 10 cents to 8¾ cents a lb. Other wrapping papers, too, have experienced a reduction in price, this reduction varying from ¾ of a cent to 1½ cents a lb.

COATED STOCK.—The recent reduction in price of coated stock has, perhaps, been responsible for some increased movement in this line.

MANUFACTURING STATIONERY.—Makers of manufacturing stationery, envelope makers and other allied lines, are feeling the detrimental effect of the strike and extreme caution is being exercised in buying.

BRISTOL BOARDS.—There has been a distinct improvement in business in this line during the past week. Demand, however, continues to be too spasmodic in character to inspire any very great confidence in its sustained improvement.

TOILETS AND TISSUES.—According to a report furnished the writer by an important mill today, business in toilets and tissues, particularly in towels, napkins and toilet papers, continues to give little cause for complaint. The mill in question is working full time.

BOOK AND WRITING PAPERS.—There has been recently some little improvement in the demand for book and writing and other high grade papers. The orders, it is true, are small compared with the orders of last year, but there has been, of late, a decided increase in their number.

NEW YORK MARKETS.

New York, July 16 (Special Correspondence).—The mid-summer lull in business seems to be making itself felt forcibly every day in the paper market and there has been very little of note doing in the trade in New York this week. The scattered buying has been almost exclusively against immediate requirements, and the fact that the average consumer is today in need of far less than usual amounts of paper precludes the necessity of placing orders other than for small commitments. When one stops to analyze prevailing circumstances, the current slow demand for paper and paper board is creative of no surprise. Consuming trades are, with few exceptions, experiencing exceptional dullness in their own fields. Here and there are bright spots on the industrial horizon — the woolen goods industry, for example, which is authoritatively reported operating at between 90 and 95 per cent of mill capacity — but such instances are by far the exception, and the business situation generally is decidedly depressed, with a great majority of industries running at no better than half of their full ratio.

It stands to reason therefore that demand for paper should be limited. Members of the paper trade view their own industry as presenting more encouraging features than in a long time; it being commonly felt that paper prices have been reduced to levels comparing very favorably with normal, and that consumers consequently have no just cause to hold back in buying, because of the present cost of paper. It can be truthfully stated that prevailing prices on some kinds of paper are actually below the cost of manufacture. Taking box boards as an illustration, plain chip board is selling today at $30 per ton and less delivered in New York, notwithstanding that even those manufacturers who are situated so as to enjoy the lowest cost of production declare that chip board cannot be made at this price under present labor and raw material costs, let alone their realizing a profit in sales at this basis.

It is therefore felt that the ruling situation in the paper market is due entirely to conditions existing in the consuming fields; that users of paper and board are not buying because they are not in need of supplies, and that when the requirements of consumers expand — as everyone is optimistic enough to believe must come about in the not distant future — that the

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improvement will be immediately felt by paper manufacturers. It is a recognized fact that paper mills today have comparatively large stocks of their product on hand; whereas jobbers' holdings are acknowledged to be down to the bone. As soon as dealers regain confidence in the market and commence to fill their shelves again, manufacturers should experience a much broader demand. Some in the trade assert that should jobbers set out to acquire but half of the stocks that they ordinarily carry mill stocks would be almost completely moved. In other words it would appear that today instead of the middle man holding the normal stock of finished paper the manufacturer has it, which turned-around condition of affairs prompts some to take a bearish view of the situation, when as a matter of fact there is nothing whatever to be creative of concern.

There is no change reported in the newsprint market. Spot demand is rather narrow, but mills are making regular shipments to contract customers, and consumption of print paper appears to be keeping up to normal for this period of the year. There are no rumors floating around concerning any contemplated alteration in the contract basis fixed for deliveries over the third quarter, and while offerings of foreign newsprint at comparatively low prices have an unsettling tendency, spot quotations also are maintained at around 5 cents per pound for roll news.

Book papers are quotably steady though, as previously outlined, some manufacturers are granting concessions when to refuse to do so would mean loss of the business. Machine finished book is bringing between 6.50 and 7 cents per pound at mills, and super book an average of 8 cents.

Wrappings are moving mainly in small lots but at unchanged prices, No. 1 domestic kraft being quoted at 6.50 to 7 cents a pound at mills. There is a relatively steady call for tissues and quotations are maintained. Fine papers are in limited demand. Jobbers are buying simply to fill commitments, and consumers, individually and collectively, are taking but small quantities as directly needed.

The board market is distinctly quieter than it was a short while back. Members of the selling trade view the present condition as the lull before the fall buying season, and report receiving numerous inquiries concerning deliveries for the latter part of August. One local mill agent states that he has more board on order for delivery next month than he has sold in any month this year. Prices are easy, and some sales at surprisingly cheap figures have been reported, plain chip having been purchased from mills near to New York at $28 a ton delivered sidewalk and filled news board at $32.50 delivered. More representative quotations, however, range above these levels.

GROUND WOOD. — The tone of the mechanical wood pulp market is stiffening, and prices, although failing to undergo any substantial change, tend decidedly upward. The principal reason for the firmness is the closing down of grinding plants because of low water in mill streams, thus reducing production and causing producers to be more reluctant to offer ground wood. Domestic manufacturers are quoting $30 per at mills as a minimum price, and this appears to be the lowest at which purchases can be made except in the case of Canadian mills situated far away from consuming points and where the higher freight involved brings the cost of pulp to the consumer up to the same basis as that of domestic origin. With newsprint mills resuming operations, it is felt that demand for ground wood is due to expand, and dealers contend that the moment demand broadens prices will rise.

CHEMICAL PULP. — Uncertainty prevails in the chemical pulp market. Domestic manufacturers continue to maintain quotations on their product, but with offerings being received from Sweden at prices in some cases below those named by producers here, consumers are holding off in buying and it is questionable just what figures represent actual market levels. It is reported that No. 1 strong unbleached Swedish sulphite is available for shipment from primary markets at as low as 3.50 cents per pound landed on this side, which indicates the cheap prices named on foreign sulphite. Scandinavian kraft is said to be freely available at 3.25 cents ex the dock, and other grades of Swedish pulp at proportionately low prices. Domestic news grade sulphite is quoted at 3.25 and 3.50 cents, No. 1 unbleached at 3.75 cents and kraft of No. 1 grade at 3.25 cents. There is little demand and current trade is within unimportant compass.

RAGS. — The papermaking rag market rules dull. Consuming mills are doing little buying aside from small lots at spasmodic intervals needed for direct use, and the aggregate volume of stock moving is negligible. Dealers argue that prices are at levels where there is scarcely no profit in grading and packing rags, and a good many sorting concerns are said to have materially reduced their operations, yet prices still display a weak tone and are gradually touching

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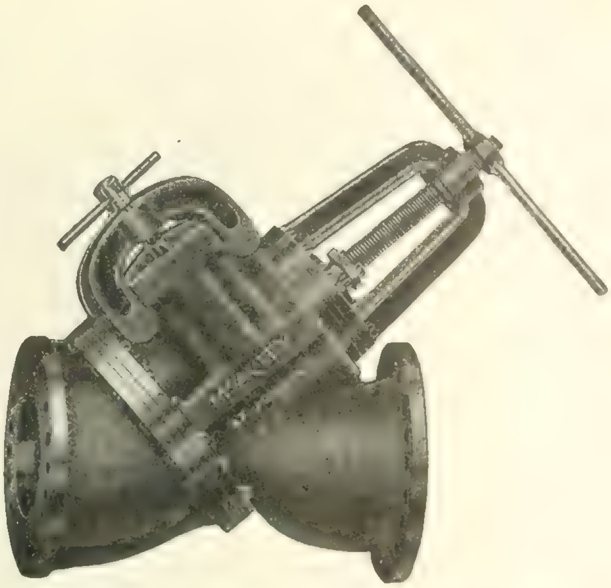

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lower levels. Some dealers are refusing to sell at prevailing prices, feeling that when buying interest among paper mills improves prices will quickly rise, but others, evidently not in so favorable a financial condition, are accepting orders and buyers are occasioned no great difficulty in getting all the rags wanted at the prices they bid. No. 1 white shirt cuttings are offered to mills at 9 cents a pound at shipping points, fancy shirt cuttings at 5.50 cents, washables at 4.50 cents, blue overall cuttings at 5.50 cents, No. 1 old repacked whites at 5 cents, repacked thirds and blues at 1.75 cents and No. 1 roofing rags at 75 to 80 cents a hundred.

PAPER STOCK. Trade in old paper, as regards all grades is light. There are several desciptions of stock moving in fairly regular fashion and consumers seem willing to take all of this material offered within reasonable price limits, but the market as a whole is quiet, and there is no single grade in keen enough demand to send prices up. In fact, the tendency of quotations is downward, and buyers frequently are securing wanted supplies at less than the figures asked by sellers. No. 1 hard white shavings have sold this week at 2.75 cents a pound New York, denoting a decline, and soft white shavings of No. 1 quality are offered with more freedom by dealers at 1.90 cents, while white news cuttings have sold at 1.50 cents. Folded newspapers continue to command no more than 35 to 37½ cents a hundred New York, and No. 1 mixed papers 30 cents.

OLD ROPE AND BAGGING. Mill orders are in the market for No. 1 domestic manila rope at 4 cents a pound at shipping points, and in some quarters it is stated this price has been exceeded slightly. There is a fair call for old rope and indications are no sizeable accumulations exist in the supply trade. Old bagging is in a dull market position and so few transactions are recorded that prices are nominal.

GEARS MADE OF PAPER.

There is a general disposition among manufacturers to hesitate about installing "silent" gears, because, in so many cases, they give short and inefficient service thus costing more in the long run.

There is a silent gear on the market, now, however, manufactured by a Canadian company, (The Diamond State Fibre Company of Canada, Limited) which besides being waterproof and oil proof gives long and efficient service at a very lo weost. These gears are made from a special grade of dense fibre of relatively high specific gravity, or with a canvas base which is adapted for all kinds of gears from the small sizes used in vacuum cleaners, silk and knitting machinery, etc., to the heavy service pinions used on machine and motor drives. Installed in a gear-drive they combine the efficiency and regularity of an all-metal gear-drive with the silent, smooth operation of a belt transmission. Their initial cost, too, is generally lower than the cost of other gears so that it looks as if they would fill a long felt want in the manufacturing world.

The crying evil of the young man who enters the business world to-day is the lack of application, preparation, thoroughness, with ambition but without the willingness to struggle to gain his desired end. Theodore N. Vail.

SOME FORGOTTEN FACTS ABOUT HOURS OF LABOUR.

By DR. W. A. EVANS.
Of Chicago Tribune Department of How to Keep Well.

At to hours of labor, the experience of the war taught us two things. One was that excessive hours of work resulted in lessened rather than increased production. In simpler phrase, where men worked twelve hours each day for seven days a week they actually produced less than when they worked fewer hours.

A British foreman said of Sunday work in the munitions factories during the earlier days of the World's War: "It gave six days' output for seven days' work and eight day's pay." Has any economist said it better? Is not this epigrammatic summing up entitled to live?

A hard and fast eight-hour day for men, women and children, regardless of the kind of work engaged in, was not founded on physiological or health considerations. Some can work more than eight hours with advantage to their health. Others cannot work eight hours. Some tasks cannot be worked at for more than eight hours with advantage of health.

The reports of the various commissions on health of munition workers and commissions to study fatigue are scientific and valuable. The American Journal of Public Health quotes R. N. Hutton, of Toronto, as saying that the chief factor in fatigue is the adaptation of the worker to his job.

The tendency is to blame the employer and the factory for over-fatigue of employes and for all the ill-health of employes developing both inside and outside the factory. It is out of the ordinary when an advisory councillor for scientific and industrial research on fatigue places the man first and the environment second.

The man who is badly adapted to his job either physically or mentally fatigues quickly, and not only fails to produce much during some of the hours for which he is paid but he goes home at night worn out, irritable, on edge, dissatisfied and a prey to disease.

Other causes of fatigue contributed by the employe in addition to poor adaptation are personal worries, age and poor health, including poor physical development. mong the factors that the employer had to do with are hours of labor, ventilation, light, space, conditions of the air as regards temperature, humidity and cleanliness, also speed rhythm, rest periods, health hazards.

NEW MAGAZINE GRINDER.

Within the next two months there will be in operation at the Black River Mill of the St. Regis Paper Company, of Watertown, N.Y., a new type of magazine pulp wood grinder, which is considered by manufacturers of ground wood pulp in this section to be a great improvement over any of the magazine grinders now on the market. It is the invention of John J. Warren, third vice-president and technical adviser of the company, and will make it possible to increase the daily production of ground wood at that plant about thirty tons per day.

CONTENTS INTOXICATING.

Some people can't stand prosperity. The horn of plenty has started many a man on a toot.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., July 28th, 1921.** No. 30

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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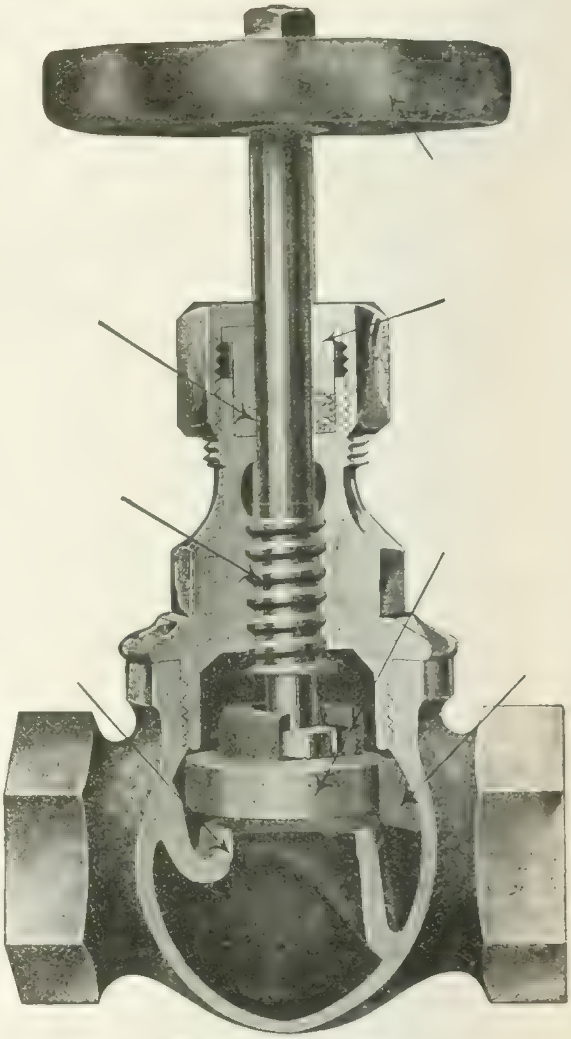

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EDITORIAL

THE HEALTH OF THE CHILDREN.

Notwithstanding the many truthful things that have been said with regard to the value and extent of Canada's natural resources, the fact remains that the greatest resource of any nation is the health, energy, skill and intelligence of the people. The most important of these factors is health because without a sound body it is difficult to attain the other qualities. It is a mark of progress in a nation to organize departments of public health, national, provincial and municipal. Other nations have taken such steps considerably in advance of such action in Canada but it is gratifying to note the energetic way in which Canadians, particularly the Province of Quebec, are attacking the problem.

Some Canadian cities have had a particularly unfavorable record for infant mortality and so called social diseases have been unfortunately prevalent. There is a close connection between these two conditions. When the present Premier, Hon. L. A. Taschereau, assumed office, one of his first statements was that the Province through the Department of Health, would organize the attack on infant mortality, tuberculosis and venereal diseases. The principal agency in this battle is education. The very unfortunately large number of young children who die can be attributed very largely to a lack of knowledge on the part of the parents of the most elementary principles of child welfare. Educational pamphlets are being prepared and distributed for the benefit of those who do not realize the harmful effects of many prevalent customs and many simple matters that are largely neglected.

In addition to this provincial effort, the Child Welfare Association will inaugurate early next month a Child Welfare Train which will tour the Province of Quebec for at least one month. There will be two coaches, one for the headquarters of the staff of doctors, nurses and clerks, and one car devoted to exhibitions, demonstrations, conferences, etc., the work being carried on both in French and English. Besides the examination of children from babyhood to the age of 14, and advice to parents in consequence, there will be motion pictures, distribution of literature and instruction in the rudiments of Child Welfare. The service of this train, which is made possible through the generosity and co-cperation of the Canadian Pacific Railway, is entirely free. Among the towns to be visited there are at least 12 where pulp and paper plants are established and we trust that the management and the employees in these mills will lend their assistance and encouragement to the good work which such a train is attempting to accomplish.

It is fortunate indeed that the authorities, recognizing the importance of Child Health as the foundation for an efficient and intelligent nation, have begun activities along this line. Healthy childhood however, can not be built successfully without healthy parents, which makes it necessary to consider in connection with child health and welfare the other two contributing problems included in the provincial health program. Here again education is the great factor although in the case of tuberculosis there is need of the opportunity of getting sunshine and fresh air and healthful employment, and in the case of the social problem we have not only to consider education but to encourage strength of character.

Matters of this kind, involving, as they do, personal feeling, present delicate and difficult problems to handle but the health of the community, while it cannot be said to be more important than the health of the individual because it is the health of the individuals, must be conserved by all proper means. If therefore, vice, intemperance, illiteracy, marriage of defectives, etc., threaten to undermine this important national asset, the face and force of the nation must be firmly set to the elimination of these under-mining influences.

The authorities, who are intelligently and courageously doing their part to improve conditions of health and morality, are not only to be sincerely congratulated for their efforts but every industry and every individual in the Dominion should be pledged to the support of such measures as may be inaugurated for the bringing about of better conditions in our country.

FROM SHIRT SLEEVES TO SHIRT SLEEVES.

It is a common remark that from shirt sleeves to shirt sleeves is three generations, meaning that the grandfather has started with nothing and by his energy has established a business which is developed by his son into a very profitable venture and passed on to the grandson, who, because of his father's wealth has not learned the lesson of industry, and becomes incapable of carrying on the enterprise and squanders the inheritance, thus bringing thet line relatively back to the starting point.

It seems to us that there is a somewhat similar danger in the distribution of the German indemnities. Estimates have put the amount due to Canada from this source as about $600,000,000. That is a very large amount and the disposition of it is a matter which demands the very greatest care and consideration. To hand out indiscriminately a proportion of this to each Canadian citizen would not only be difficult but foolish. In the first place we believe it is safe to say that the majority of adult Canadians did not earn the $200 or $300 which would thus be coming as their share, while, on the other hand, there are a great many in this country who are much better off in every way than in 1914. Furthermore, no one will dispute the statement that no amount of indemnity will compensate for the loss of the 50,000 lives sacrificed for the safety of the nation, the Empire and the world. It is only in part also that money can make up for the loss of a hand or an eye and money can but supply the bodily needs of those who are now incapacitated for self-support. It seems to us, therefore, that the only just distribution of any indemnity will be in providing as far as possible for the financial needs of those whose earning powers have been impaired and in substituting for those who had previously been the providers. By this we mean that any monies thus received should be invested so as to pay dividends to such dependents, comparable with not only their former earning power and incomes, but taking into account also, increasing ability and larger needs as families grow up until children become self-supporting. We believe that deliberately to hand out any considerable sum of money to able bodied young men is a handicap and a weakening influence rather than a help. We believe it is only by exercise and struggling that strength is developed and the nation needs vigorous well developed brain and muscle for the work that lies ahead.

Very likely the payments (if any) on the indemnity account will be used for reducing our own national debt but we believe the equivalent should be carried to provide suitable incomes for those who have suffered and not that any national advantage should accrue. We believe that a national struggle to win out through our own efforts in competition with the defeated nations who have been compelled through force of circumstances to do their utmost, will be a good thing for Canada. On the other hand any temporary good gained by the distribution of indemnities is likely to become an artificial prop which will make it all the more difficult for us to stand against competition later on, while our rivals will have been benefiting by the extra efforts and economies that they have been forced to practice.

COBWEBS.

The Spanish River News for July 9 has a picture of Miss Rowan and Miss Collins "enjoying a two-some picnic". From their looks it was evidently also toothsome. Miss Collins is on the staff of abstractors for the Technical Section.

The Semi-Weekly Post of Thorold made up some stock from a local paper mill into examination pads, etc. The Post appeals to readers to use a community product. More of that spirit, especially when it spreads to the public would help Canadians in many ways.

At least four firms in the United States and Canada have built paper machines to run at 1000 feet per minute, or better. This indicates a general advance in engineering and construction ability in keeping with the other forward developments of the pulp and paper industry.

One is surprised to see Bartholdi's statue of Liberty used as a trade mark by the "Statue" Printing Works, Leeds, Eng.

Good night! The government of Siam is going to establish an experimental paper mill. This is for the special information of those who oppose a properly equipped and organized research institute for Canada.

The American Writing Paper Company moved a paper machine from Holyoke to Chicago as a part of their exhibit in the Graphic Arts show this week. The machine is only about 9 feet long, but it makes real paper 5½ inches wide.

A rather unusual incident of the convention of the American Federation of Labor was the adoption by that body of the report of the minority of the committee as a declaration on railroad legislation.

The Shawinigan Falls Review puts it up to its readers to protect their jobs by preventing fire in the forests. If everyone is careful, there will be a decrease of 90 per cent in the number of forest fires.

A SAFETY ALPHABET.

(From Common Sense.)

Accidents are somebody's fault.
Before crossing tracks, stop, look and listen.
Co-operation is the secret of Safety First,
Daredevils are usually killed.
Educational safety work is very important.
Falls kill many persons.
Great pains from little injuries grow.
Habit controls our lives; adopt careful habits.
Injuries disable millions.
Jay walking may cost you your life.
Keep children out of the street.
Loose clothing should not be worn around machinery.
Matches are unsafe playthings.
Never take a chance
Obey that safety warning.
Queer how careless we all are.
Protect yourself by practising safety.
Read Common Sense
Step back when a tree starts to fall.
Thinking is the key to safety.
Unless you help us fight carelessness, it will sooner or later get you.
Vigilance is the mother of safety.
With co-operation we will put safety over.
Xercise precaution when in doubt.
You, think of those dear ones at home.
Zones of safety protect you. Use them.

Apologies to U. R. and E Co., Baltimore, Md.

Decay in Pulp and Pulp Wood

"For nearly two years, the United States Forest Products Laboratory at Madison has been making a jointly by the Laboratory and the paper industry," says a letter from the Information Service of the American Pulp and Paper Association; and the experimental work has been completed. Owing to the large quantities of wood pulp now in storage, it has been deemed advisable to publish at once a preliminary report of results of this exhaustive study, without waiting for the preparation of the complete detailed report. The complete report will later be published in pamphlet form by the American Paper and Pulp Association. Meanwhile, however, the Association is sending out the preliminary report given below, in order to make available at once the means for preventing great losses by decay during the present summer."

A contribution has also been received from Dr John S. Bates, discribing results of mill size tests carried on at the plant of Price Bros. & Co., it will appear in an early issue.

In August, 1919, the Forest Products Laboratory, cooperating with the Bureau of Plant Industry, United States Department of Agriculture, started an investigation of the deterioration under commercial storage conditions of wood and pulp used in the manufacture of paper and fibre products. This was done at the urgent request of mill operators who were suffering heavy losses, particularly in the storage of groundwood pulp. In February, 1920, an adequate fund for continuance of the study was subscribed by a group of mills, mainly located in Wisconsin and Minnesota but ranging as far east as Maine. The study has now progressed for nearly two years.

The major features upon which the attention of the laboratory have been focused have been the improvement of wood storage practices and the preservation of stored pulp. Prevention of decay and molding in stored pulp has been attempted by adding antiseptics to the pulp as it goes over the wet machine, or, as in the case of much of our experimental work, by adding the chemicals to the wet laps after removal from the wet machine. The present paper deals only with these preservative treatments.

The preservative action of 106 different chemicals has been investigated. In selecting these their cheapness as well as their probable efficiency were taken into consideration, but a considerable number were included solely because of their comparatively low cost.

In appying these chemicals the principal laboratory method consisted in running off on a small wet machine laps of fresh groundwood pulp about 21 inches long and 12 to 14 inches wide. After the ends were trimmed, these were laid out in groups of ten and sprayed on both sides by means of an ordinary 2½ gallon compressed air garden sprayer operated by hand.

The concentration of solution used depended in large part on the solubility of the chemical, but where the antiseptic value was doubtful and the substance easily water soluble in the desired amount 5 per cent. solutions were used in the preliminary tests. In later tests on substances which looked promising the concentrations were in many cases reduced.

Moisture determinations on the laps showed them to be about 30 per cent. dry before spraying.

The laps were separated into bundles of seven and three, respectively, the bundles being weighed both before and after spraying in order to determine the amount of solution absorbed. These data, however, were not secured for the first three series comprising about 300 laps.

Although the amount of solution used was measured, the quantity of chemical actually absorbed was determined by the increase in weight of the bundles after spraying, since a considerable amount of preservative was lost during the process of application.

Each bundle of seven laps was inoculated profusely with a mixture of mold spores by shaking a heavy water suspension of the spores upon the laps from an atomizer bottle immediately after spraying. The bundle of laps was then folded once.

Each bundle of three laps was inoculated with wood-destroying fungi only, using five pieces originally isolated from decayed pulp. These fungi were grown on agar in petri dishes and small squares of the agar with growing fungus were applied to the surface of the laps at five points in each two laps. These bundles were also folded once.

At the end of a day's run the bundles of laps were taken to a storage house in which the air was kept highly humid and the temperature regulated around 72° to 75° F. The bundles of seven were for the first few months closely stacked on narrow shelves with one or more untreated laps separating the treated bundles. Occasional bundles of untreated test laps were interspersed to serve as checks or blanks.

For the last ten months of the test, however, the bundles were repiled with thick laps of very rotten hydraulic-pressed pulp separating each layer so as to give a more severe infection.

The bundles of three, inoculated only with wood-destroying fungi, were piled on separate shelves, separated only by laps of clean untreated pulp.

Tests on the more promising preservatives have been repeated several times using the same or lower concentrations. In addition to the laboratory tests a small semi-commercial test involving about one ton of wet pulp was made at a Wisconsin mill, treating usually three laps with a given preservative or concentration on the wet machine by dripping the solution on the pulp just before it reached the press rolls.

In all, about 3,000 small groundwood and 1,400 small sulphite laps have been tested in addition to sixty-one commercial laps treated at the mill, not more than 220 lbs. for any one test.

The mill tests have now run six months and the older laboratory tests date back to August, 1919, while the latest had been runnnig nearly eleven months at the time of the last inspection.

Of the 106 chemicals tried, seven had proven worthy of mention at this time. A discussion of these follows:

BORAX

This is a white substance 5.3 per cent. soluble in water at 70° F., or 7.4 per cent at 86° F. It is nonpoisonous and therefore safe for workmen to handle. It slightly darkens the pulp, but not to an objectionable degree.

The small laps treated with 5 per cent. solution contained approximately one pound of chemical per 100 pounds of wet pulp; those treated with 10 per cent. solution, contained up to 1.7 pounds.

Results.

The 5 per cent. solution applied at the laboratory held the pulp in good condition (slightly molded in a few cases) for six to eight months. The 10 per cent. solution kept it clean or nearly so for six months.

After thirteen to fifteen months the 5 per cent. treatments were in fairly good condition, although some mold and probably wood-destroying fungi were present.

The 10 per cent solution showed no particular advantage over the 5 per cent.

The mill tests with a 5 per cent. solution dripped on the pulp back of the press rolls were not as favorable, since the pulp was severely stained with blue-black molds within six months. This may be due to the actual concentration of the chemical in the pulp being considerably lessened by the method of application, the chemical being partly lost in the white water at the press rolls.

BORIC ACID

This is a colorless substance 4.8 per cent. soluble in water at 68° F. It is non-poisonous and safe to use, although more expensive than borax. It gives a slight pinkish-brown color to groundwood.

The pulp contained from 0.7 to 1.2 pounds dry chemical per 100 pounds wet pulp.

Results

The pulp was somewhat molded after six months, but in fairly good condition. After twelve to thirteen months it was still in fair condition with no active decay present.

SODIUM FLUORIDE

This is a white salt 4.3 per cent. soluble in water at 64° F. It is perfectly safe for workmen to handle and produces no chemical discoloration in the pulp.

The small laps treated with 3 per cent. solution contained approximately 0.6 lb. of chemical per 100 pounds wet pulp; the 5 per cent. treatments contained about 0.9 lb.

Results

The 3 per cent. solution preserved the pulp very well, permitting only slight molding after one year. Part of the pulp at the mill was somewhat molded after six months, but not seriously.

The 5 per cent. solution held it nearly clean for twelve months except in one case, in which the pulp was badly molded and somewhat decayed.

The 1 and 2 per cent. solutions at the mill gave somewhat variable results, the pulp in some cases being only slightly blue-black molded, and in other cases rather badly so. It was, however, free from decay.

SODIUM DINITROPHENOLATE.

This is a yellow salt producing a yellow solution. It is approximately 2.4 per cent. soluble in water at 59° F. While in concentrated form it is considered an industrial poison, it is not thought that it will injure the health of workmen in the dilution recommended, provided reasonable care be exercised. It colors the pulp slightly yellow in the lower, and distinctly yellow in the higher concentrations. This color readily washes out, but the washed pulp may be somewhat darker than normal.

The pulp contained approximately the following amounts of dry salt per 100 lbs. wet pulp:

1/16 %	concentration	.015 lb.
1/8 %	”	.025 lb.
¼ %	”	.06 lb.
½ %	”	.08-0.1 lb.
1 %	”	0.14 to 0.2 lb.

Results.

One-sixteenth per cent. concentration partially protected for twelve to thirteen months.

One fifteenth per cent. concentration at the mill permitted a small amount of blue-back mold in six months.

One-tenth per cent. at the mill permitted a little mold and decay in six months.

One-eighth per cent. kept the pulp clean or nearly clean condition for twelve to thirteen months.

Two-fifteenths per cent. at the mill held it in fairly good condition for six months.

One-fourth per cent. preserved completely for six months. In one case there was considerable decay in thirteen months in the groundwood, although the sulphite remained clean. At this concentration the pulp is discolored a rather deep yellow.

One-half per cent. preserved well for six months, but permitted a little molding and decay in twelve to thirteen months.

One per cent. almost completely preserved for thirteen months.

SODIUM DICHROMATE

This is a reddish brown substance readily soluble in cold water and yielding an orange-yellow solution. It immediately stains the pulp slightly yellow but on standing this becomes brownish, darkening the pulp somewhat when applied in a 2 per cent. concentration. It is classed as a poison but is not considered dangerous to handle.

Pulp treated with ½ per cent. solution contained about 0.1 dry salt per 100 lbs. wet pulp; that treated with 1 per cent solution 0.2 to 0.24 lb.; with 2 per cent. solution about 0.4 lb.

Results

One-half per cent. solution preserved the pulp for about three months but failed in six months.

The one per cent. solution kept it in rather good condition for six months but failed in thirteen months, except in the case of sulphite pulp. The slight darkening effect is not objectionabe.

The six months test using a 1 per cent solution at the mill was very favorable, with only slight molding.

The 2 per cent. solution kept the pulp clean or nearly so for five to six months, but largely failed from mold and decay after twelve to fifteen months, although the sulphite held up better than groundwood. The six months' mill test was very favorable.

SODIUM CARBONATE.

This is a white salt readily soluble in cold water. It is a fairly strong alkali, consequently browning the pulp to a marked degree. This color readily bleaches out, however, in the case of sulphite pulp, without increased bleach consumption, but the pulp is somewhat softened from the action of the alkali.

The sulphite pulp treated with 5 per cent. solution contained 1.2 lb. of chemical per 100 lbs. wet pulp. No data are available on groundwood.

Groundwood treated with 7 per cent. solution contained 1.5 lb. of chemical.

Pulp treated with 10 per cent. solution contained 2 lbs. of chemical.

Results

In general, the 5 per cent. solution kept the pulp in clean or nearly clean condition for a year, but in the two earlier series it became molded and rotted after twenty-one months

The 7 per cent. solution held the pulp nearly clean for thirteen months.

The results on the 10 per cent solution were likewise favorable. After twelve to fifteen months the pulp varied from clean to somewhat molded, with traces of decay in some cases.

SODIUM BICARBONATE

This is the ordinary white baking soda. It is soluble up to about 8½ per cent. in cold water. It browns the pulp the same as sodium carbonate and also apparently softens it.

Pulp treated with 5 per cent. solution contained 1.1 to 1.2 pounds of chemical per 100 pounds wet pulp. That treated with 10 per cent. solution contained 1.9 to 2.3 lbs.

Results.

In general, the 5 per cent. solution was about as effective as 5 per cent. sodium carbonate.

Pulp treated with 10 per cent. solution was clean or only slightly attacked by fungi after one year. The first series was in bad condition, however, after twenty-one months.

In considering the pulp preservation question it may be well to mention that neither fresh nor waste sulphite liquor have proved satisfactory, nor has bleach liquor, under the severe conditions imposed in the laboratory tests.

A few other substances not yet manufactured on a commercial scale, but tested only under mill conditions over a six months' period, have proven highly efficient and should be given more rigid investigation provided they could be prepared in commercial quantities.

GENERAL DISCUSSION OF PRESERVATIVES.

In selecting a suitable preservative several things besides effectiveness as an antiseptic, must be given consideration, such as:

1. Poisonous properties.
2. Objectionable chemical discolorations.
3. Objectionable odors affecting the workmen.
4. Solubility in cold water.
5. Cheapness.

Some substances which are quite efficient as antiseptics must necessarily be ruled out of commercial use because, in handling either the solutions or sprayed pulp, sufficient quantities of the poison may be absorbed through the skin to impair the health of the workmen. Likewise, violent poisons which might accidentally enter the body through the mouth must be avoided in order to protect the consumer. Examples of such dangerous substances are mercuric chloride (corrosive sublimate), sodium arsenate, sodium cyanide, etc.

Some highly efficient antiseptics produce objectionable discolorations in the treated pulp, due either to the color of the chemical or its caustic or other action on the wood fibre. All of the alkalis produce browning, the depth of which depends on the substance used and the concentration of the solution employed. For instance, borax produces a slight browning but not sufficient to be objectionable, while both sodium carbonate and sodium bicarbonate will distinctly darken the pulp; too much for successful use commercially.

Sodium dichromate likewise ultimately browns the pulp considerably when applied as a 2 per cent. solution and above, and some mills might object to it on this score. In the single mill test made, however, the superintendent thought it would be satisfactory.

Sodium dinitrophenolate is apparently not adapted to commercial use on groundwood in concentrations above ⅛ per cent. Even at ⅛ per cent. the yellow tinting is distinctly noticeable, but it readily leaves the pulp on washing.

None of the substances mentioned have objectionable odors, but some of the chemicals experimented with are open to this objection.

Solubility in cold water is a very important factor, as, in most cases the chemicals are most easily applied in the form of water solutions. The solutions should be applied on the press roll. The concentration employed should be sufficiently high to reduce the amount of water applied to a point where it will not interfere with the removal of the laps from wood rolls. In the case of such substances as borax or boric acid, where the solubility in cool water is limited to 5½ to 6 per cent., careful adjustment of the rate of flow will be necessary in order to apply the required amount of dry chemical and at the same time reduce the amount of water to a minimum.

With a brass roll there is little danger of the pulp sticking to the roll.

When the solution is applied back of the press roll the loss in antiseptic is too great, it being squeezed out with the excess water at the roll. Tentative tests made on the experimental wet machine at the Forests Products Laboratory indicate that only about 40 per cent. of the chemical applied is thus retained by the pulp. This difficulty can be partly overcome by applying a more concentrated solution to the pulp press roll. When so applied the retention is about 70 per cent, with a 5 per cent. solution and 74 per cent. with a 2 per cent. solution.

In applying preservative solutions this loss of 25 to 30 per cent. must be compensated for in order to secure the actual concentration of the chemical in the pulp which is necessary for preservation.

In interpreting the results presented in this paper it should be kept in mind that the preservative applied in the laboratory tests was all retained, while in the mill tests in all probability 50 per cent. or more was lost in the white water.

Outside of technical difficulties in application the deciding factor in the use of any chemical from a commercial standpoint is the cost and the laboratory workers have had this constantly in mind.

Assuming that the pulp normally leaves the wet machine one-third dry, in order to secure the retention indicated in the laboratory tests outlined above (after compensating for the loss of chemical in the white water) the amount of dry chemical applied at the press roll per ton of air dry pulp would be as follows:

Strength of Solution	
5 per cent.	80 lbs. per ton
3 per cent.	48 lbs. per ton.
2 per cent.	32 lbs. per ton.
1 per cent.	16 lbs. per ton.
⅛ per cent.	2 lbs. per ton.

The market quotations on the chemicals which seem best adapted for commercial use, as taken from the June issue of the "Oil, Paint and Drug Reporter" and verified by quotations by telegraph from manufacturers, would place the chemical cost of treatment per ton of air dry pulp as follows:

Borax at 5½c in 3 % solution	$4.40
Boric acid at 13¼c in 5 % solution	10.60
Sodium fluoride at 12c in 3 % solution . .	5.76
Sodium dinitrophenolate at 75c in ⅛ soln.	1.50
Sodium dichromate at 8½c in 1 % solution	1.36

A number of mills manufacturing pulp were recently circularized by the Laboratory in order to gain some idea as to the additional expense they would consider commercially feasible in safe-guarding their pulp which is to be stored for any considerable time. Replies were received from twenty-three. The estimates of the nine companies submitting definite figures varied from $1.25 to $5-$6 per ton, under present commercial prices, the average for maximum figures being about $3.50. On this basis only two of the preservatives suggested would be available, unless mill tests should further demonstrate that lower concentrations could be used, and this is altogether a possibility under improved methods of applying the preservatives so that a greater amount will be retained by the pulp. Likewise greater attention to improving sanitary conditions in storage will assist in keeping down fungus infections, such as, for instance, the use of clean concrete bases upon which to pile, the removal of all rotting debris from the vicinity of piles and close attention to see that no infecting material, such as bits of infected wood, planks or sticks which have been in contact with the soil be introduced into the piles. This latter is highly important, as the least bit of infected wood or other debris mixed in with the laps will serve as a center of infection which may eventually destroy large sections of a pile.

CONCLUSIONS

Judging from the antiseptic efficiency and freedom from other objectionable features sodium fluoride appears to have given the best results of those preservatives reported upon.

Borax follows a close second.

Boric (boracic) acid is equal or somewhat superior to borax but the greater cost throws it out of competition.

Sodium dinitrophenolate in 1/8 per cent. concentration appears very promising, with an antiseptic efficiency equal to anything tried, but the yellowish chemical discoloration of the pulp may prove objectionable for some purposes. This readily washes out, however, although it may leave the pulp somewhat browner than normal.

Sodium dichromate appears to be less favorable than the four above mentioned substances as the antiseptic efficiency varied rather too widely in the tests and the tendency toward browning, and possible softening, of the pulp is rather marked, particularly in concentrations of 2 per cent. and above.

Sodium carbonate and bicarbonate, while quite efficient in 5 per cent. solutions, brown and soften the pulp too seriously for commercial use.

RECOMMENDATIONS FOR FURTHER WORK.

Actual mill tests on not less than 500. lbs of wet pulp should be made on each of the above preservatives, applying them at the press roll and wherever possible in higher concentrations than formerly so as to reduce losses in the white water. In addition to these there are a few other substances which appear promising but which have not yet been sufficiently tested to report upon.

This work is entirely dependent upon mill cooperation and must necessarily be financed by them, as the fund previously set aside for the pulp deterioration study is now exhausted.

A list of manufacturers, taken from the Chemical Engineering Catalogue, who can supply the various chemicals described, can be secured by request from the American Paper and Pulp Association.

SWEDEN'S FOREST PRODUCTS.

A very interesting book entitled "Sweden as a Producer of Wood, Woodpulp, Paper, Tar and other Forest Products" has been published by A. B. Svensk Teknolog, Foreningens Forlag, Stockholm, and distributed through the Swedish Journal of Commerce, New York City. The contents refer to and are classified according to the Wood Goods Industry, the Joinery Industry, Woodpulp, Cellulose, Paper, etc. This publication gives in concise form much valuable information regarding the Swedish industries dependent upon the forest. Numerous tables not only give the production of these various materials according to the class of the product and the name and address of the manufacturer but also gives certain comparisons of the Swedish resources and developments with those of other countries. At the end of the book there are interesting descriptions of a number of Sweden's more important manufacturing establishments. These are very nicely illustrated with interior and exterior pictures of the mills. There is also a map of Sweden showing the location of 185 pulp and paper mills. The book is in English with the main headings of tables given also in French and Spanish. We wish to take this opportunity to thank the publishers and the Swedish Chamber of Commerce for their courtesy.

CHEMICAL EXPOSITION WILL BE HUGE.

That the coming National Chemical Exposition — the Seventh — will be the greatest in the history of the chemical industry of the Continent is no longer doubted. The show will be hed in the Eighth Coast Artillery Armory, New York City, during the week of September 12, and every inch of space will be devoted to showing the progress of chemical research in America. This, as is well known, has astonished the scientific world in the past five years, for before the world war America held only a minor place in the Chemical Hall of Fame.

Thus far more than 400 exhibitors will have places in the exposition. Last year the total was 457, and before the books are closed for the 1921 show Fred W. Payne, who with Chas. F. Roth, is managing the exposition, expects that last year's figures will be exceeded. It is certain that every branch of chemistry will be represented and that the public will be introduced to many new and important phases of chemical development.

Inasmuch as all manufacturers use chemicals or chemical machinery in some form, it is only natural that they should desife to witness a display that offers all that is most modern in their requirements.

Messrs. James A. Conners and William H. Wentworth of the James W. Sewall forest engineering office, of Old Town, Maine and Washington, D.C., were in attendance at the Quebec Limit Holders meeting at Montreal this last week. They exhibited specimen data of the work Mr. Sewall is doing for McLachlin Brothers, Limited, Arnprior, Ontario. This consists in a detailed cruise and mapping of the McLachlin lands in Ontario and Quebec, an area of about 1,000,000 acres.

The last dividends reported for 30 representative German paper mills ran from 0 to 60 per cent. A great many companies have largely increased their capitalization.

Forestry in Finland

By EDWARD BECK, Publicity Department, Canadian Pulp and Paper Association.

Helsingfors, Finland, June 23. — Finland, perhaps more than Sweden, is dependent upon her forest resources. As in Sweden, the people appreciate the importance of maintaining and increasing these resources, although this realization, as interpretated into practical usage and protective legislation, dates back less than a quarter of a century. Before that time Finnish forests were largely allowed to take care of themselves.

During the last twenty-five years laws, based upon those of Sweden, have been enacted and are now rigidly enforced. State and private owners of forests co-operate together in building up and maintaining the forests and in employing means for their perpetuation.

The practice of reforestation on a broad scale is carried on almost universally, except in the more northerly parts of the country where there is still much wild land. Finnish forest methods, however, are generally based upon the theory that it is better to let nature do the work where possible and to use artificial means only where necessary, and most of the cutting is done with that end in view. Some fine examples of natural forests from 60 to 80 years old are to be seen.

Here, as in Sweden, the private owners put their forestry and logging operations under a single supervision and management. The chief forester directs how and what trees shall be cut, always with the object of impairing the growing forest as little as possible, and following the cutting operations when necessary with replanting. Most of the companies buy timber in addition to cutting their own. They maintain separate organizations to deal with bought timber but the same requirements as to replanting is made to apply.

The extent of the forest organizations built up and maintained by the companies may be illustrated by that of the Kymmene Aktiebolag, one of Finland's largest pulp and paper companies, which owns over 600,000 acres of forest lands scattered over a wide area. This company employs a chief forester, nine district chiefs, 100 foremen and the necessary laborers, all of whom devote their entire time to forest operations. The chief forester and the district chiefs are well paid and are each provided with a home which is also the forest headquarters for the district. All the chiefs are trained foresters and have been through the technical schools established for that purpose. This company has also accomplished what few state or private owners have succeeded in doing in having made a complete survey of their forests and learning to a certainty the amount of available timber, the annual growth and all other details. By means of this survey they have been enabled to map out their forest program for years in advance.

Finland's total area comprises approximately 144,250 square miles, of which about 17,000 square miles, or 11.75 per cent consist of inland waters. More than one-half of the land area is made up of forests. There are about 73,000 square miles which produce merchantable timber of which about 58,000 square miles are classed as highly productive. About one-third of Finland's land area lies north of the Arctic circle and includes most of the less productive forests.

In Finland the State owns about 38 per cent of all the land, including 20,000 square miles of productive forests. (There are private companies in Canada which control a considerably larger forest area.) Private companies own a greater proportion of the best forests, their holdings approximating 38,000 square miles. The State sells the standing timber on its holdings by methods similar to Sweden's and makes adequate provision for its replacement. Private owners are restricted as to the uses of their forests and are not allowed to cut in any manner that is considered injurious to future development. When they cut the land clean, as they sometimes do, they are obliged to replant it.

Selective cutting is generally practiced, the trees being taken out with due regard to the effect produced on those left standing. Drainage is resorted to for the purpose of increasing production, and thinning is carried out in a scientific manner at necessary intervals. Fire hazards have been reduced to a minimum and the fire losses, compared with those in Canada, are practically negligible.

Pine and spruce form the basis of most of the forests with an admixture of birch and other hardwood species. No authentic survey of the timber resources of Finland is available, although there are several estimates which are held to be reliable. One, made by Col. Gosta, Serlachius, president of the Finska Cellulosa-forcumigen, places the timber resources of the country at approximately 31,000,000,000, cubic feet (335,000,000 cords). Calculations made on the assumption of an annual growth of 1.5 per cent, which has been shown to be below the actual, indicates a yearly timber yield for the entire country of 15,650,000 cords.

Finland's present timber requirements for all purposes, domestic and industrial, are drawn chiefly from a territory which includes rather less than three-fourths of the total forest area of the country. This territory, however, represents a considerably larger part of the actual timber resources. It is estimated that from 20 to 25 per cent of the total standing timber of the country may be clased as merchantable material of sawlog dimensions.

In normal years Finland exports about 300,000,000 cubic feet of timber and sawn lumber. (There are approximately 375 sawmills in Finland, many of which, however, are of very limited capacity). The wood pulp industry produces 220,000 tons of mechanical and 350,000 tons of chemical pulp a year, using up about 900,000 cords of wood in the process. The consumption of timber for domestic requirements, including industrial and railway fuel (All locomotives here burn wood) has been estimated at 5,000,000 cords a year, much of which is hardwood, principally birch.

These figures indicate on the surface that Finland is using every year an amount of wood equal to or exceeding the estimated annual growth, although in reality, especially when active reforestation is taken into account, the annual increment is considerably greater. It has been estimated that the forest resources of Finland are sufficient to insure a supply of pulpwood for requirements based upon the present rate of consumption for 145 years, without taking into account the new forests that are growing up in the meantime.

During recent years the Finnish government has increased its forest holdings by purchases from private owners, a policy adopted with a view to restoring the productivity of lands exhausted by reckless cutting in the past and of raising the general standard of economic forestry in the country. The most desirable areas of accessible timber lands in Finland are now well taken up and there is apparently little prospect for industrial companies to increase their holdings by purchasing additional lands from the States. During the unsettled conditions of the past few years there have been many transfers of land among private and corporate owners, with the result that several of the stronger industrial companies have greatly improved their position in this respect. Today, however, the State is doing its utmost to prevent agricultural lands from being bought up by the companies and reverting to forests.

Forest practice and lumbering methods in general, while showing marked improvement in the last fifteen years, are still said to fall somewhat short of the high stage of development reached in Sweden. State supervision and control, as already noted, have been responsible for great improvement in forestry practice and the increasing value of timber has gradually forced a higher standard of efficiency in lumbering methods and the utilization of timber for industrial purposes. In some remote districts there is said to be still much waste of timber by reason of careless lumbering and from fires and other sources, but these are in a fair way of being eliminated.

Timber and water powers constitute Finland's chief national asset, and the lumber, pulp and paper industries are, and must continue to be, the foundation of the entire economic life of the country. The present population of Finland does not exceed 3,500,000. Although 55 per cent of the people are classed as dependent on agriculture, the country as a whole is not self-sustaining as to food. Many peasant farmers engage in lumbering during the winter season and the sale of timber from small peasant holdings constitutes an important part of the annual cut of timber. The growth and present importance of the timber industry is of prime importance to the national welfare. The fact that the Government and the people as a whole fully realize this is shown by the manner in which the forests are now being maintained as well as by the steps that are being taken to ensure their future.

GERMANS BUSY IN BALKANS.

An instance of German penetration if the formation of the Papier-und-Holzstoff-industrie Akt.-Ges. in Zagub. Capitalized at 100,000,000 (the monetary unit not given by Der Papier-Fabrikant, is the Czecho-slovak Crown now worth about $.0132.—Ed.) The project is brought about through Dr. A. Miller in Dresden, secretary of the German Commercial Union for the Balkkans and the Orient. A model plant will be built in Krapina, 25 miles west of Agram in South Slovakia. Coal, limestone, pyrite and good water are available at or near the mill site. Apparently the whole plant, machines, digesters, electric drive, etc., is to come from Bautzen, Germany.

It is inferred from the article in Der Papier-Fabrikant, June 24, 1921, that this is part of a movement to neutralize, or alienate, French and other "enemy" influence in the Balkans. The article says that there is great building activity in Belgrade and other parts of the country.

WHY WORK OVERTIME?

It is said that it takes 64 muscles of the face to produce a frown, while only 13 muscles will produce a smile.

So after all is said and done it is easier to smile than to frown.

PAPER, ETC. AT THE LONDON EXHIBITION.

From H.M. TRADE COMMISSIONER, Toronto.

In this, as in other industries, the throttling effects of the coal stoppage are being severely felt, and trade has fallen to very small volume. Purchases made are for immediate and urgent needs only, and no improvement can be anticipated until the dispute is settled. At the same time, the belief appears to be firmly established that, given a satisfactory settlement, a material improvement in trade is bound to ensue and that owing to the almost general depletion of stocks business will be brisker than before the stoppage occurred.

In the meantime those mills that are carrying on are finding increasing difficulties, and the numbers closing down and adopting shorter hours are steadily increasing.

Business at the Sixth International Printing, Stationery and Allied Trades Exhibition, held at the Royal Agricultural Hall between 30th April and 14th May failed to reach a fully satisfactory volume. Reports from the different sections varied; while in some sections exhibitors were well pleased with results, in others there was some disappointment. On the whole, however, business was as good as could be expected. The number of exhibitors participating was 226, but of these practically two-thirds were manufacturers of, and agents for, printing machinery and machines for the bookbinding and stationery trades. There was a fair number of American firms represented and one or two French, Swedish and Danish, but the great majority of the exhibitors were British. An outstanding feature of the exhibition was the marked advance shown in the quality and method of production of process plates for various kinds of printing; considerable reduction has been effected in the time required to produce a finished plate ready to go to the press. The process of photogravure also showed improvement, not only in regard to the machinery and appliances used, but in the quality of the resulting intaglio prints.

In the paper and stationery section the exhibits generally were of a high order.

SATISFACTORY SALES.

The individual producer is the one to say what price he must receive for his wares. His business judgment will not permit to ask an excessive profit (that would invite competition and perhaps excess production with destructive results), and he certainly dares not quote prices which cannot return proper compensation to the capital and labor invested in his product.

Satisfactory sales are based on confidence between the buyer and the seller.

It is our belief that prices made effective for specified periods or seasons will establish confidence in prices.—Lakewood Engineering Co.

Direct advertising is a wonderfully flexible business medium, also limitless in its possibilities for illustration, text, color and for typographical effect.—The Dover Type.

Mr. Joseph D. Latno, of the James W. Sewall office, Old Town, Maine and Washington, D.C., with a crew of estimators, is exploring about 500,000 acres of land in northern Maine for the State in connection with arriving at a fair valuation of timberlands for taxation purposes.

The Relation of the Office to the Factory*

By C. N. MOISAN, of Standard Paper Box Co., Ltd.,
Montreal.

The office is one of the biggest assets of any well regulated business. In the minds of many it is deemed to be an expense but I would rather consider it in the light of a valuable asset.

Its object is not only to take care of all the details incident to a business, but also to keep a close watch on factory production in order to see that a profit shall result from its operation.

It may be said, with truth, that in conjunction with the executive it is the mainspring or brains of most manufacturing concerns.

The methods used in co-ordinating the work of the various departments of a factory, has an important bearing on its production and the hearty co-operation of the office staff and superintendents is quite essential to the success of the business.

The members of the office staff, whose duties bring them into constant contact with the production end, should be very careful of the way matters are handled as between the office and the factory managers so that the best of feeling should exist.

It quite often happens that the factory foremen are diffident about giving technical or other information, but this can be easily overcome by being tactful and patient and showing a desire to make the operators feel that they are all working for a common object.

What is necessary is the co-operative spirit throughout the whole plant, and if such is welcomed, increased production will result, the workmanship will be of the highest order and larger profits are sure to accrue.

Perhaps an illustration of the co-operative spirit might be summed up in this manner.

A General Manager replying to a vote of thanks by one of his Directors said: "We have a very efficient staff taking everything into consideration, a staff we can depend on and there is no bickering to be expected between the office and the factory departments. Each man is out fighting for his own department, but when there is a move proposed in the interest of the whole, he without hesitation gives way and that has helped to a very large extent in minimizing our costs and producing the results we have been able to show for the past few years."

This is the spirit which should actuate every employee who has the business at heart. A few years ago I was standing on a balcony overlooking a factory workshop in company with a group of executives and heads of concerns. Below us were perhaps a hundred men at work. The chief executive noticed a man who was doing something wrong and called out so that everybody could hear him "Here don't do that." Among others who heard this remark were the man's foreman and the factory superintendent.

That incident to my mind has always stood as a capital example of a serious error in management, that is, overstepping the regular lines of authority in the organization of that concern.

One of the best types of business organization resembles that of an army in which the lines of authority carry directly down from top to bottom. The head of a regiment does not direct squad movements. His orders embrace the general movement desired and the orders are repeated to the various companies and platoons by their respective officers.

The authority of the factory manager would be quickly undermined if the workman under him constantly received orders, perhaps contrary to his, from some of the office executives. But the executive who called to the workman from the balcony disregarded this undermining effect on the authority of his factory manager when he shouted "Here, don't do that". This in addition to the needless humiliation of the man before his fellow workmen in the presence of strangers.

It is difficult occasionally to keep from putting one's fingers into the pie, where they do not belong.

Most of us, I suppose, have a lingering memory of the copybook maxim, "If you want a thing done well, do it yourself."

Once upon a time it is possible some one in the office did with his own hands a lot of the jobs that others are doing now. But that is no reason to believe that he is still more expert than they. And if it is found that a workman is doing something palpably wrong, it is the duty of the executive to report the incident to the person responsible for the proper performance of the job.

Harmony should be promoted among the departments especially in connection with the proper execution of orders and if the co-operative spirit prevails, the present reputation of the firm will be further advanced with its customers, and many internal economies will be effected. Sometimes it has been found that the factory managers tend quite unconsciously to favor one part of the work at the expense of the other.

This is due as a rule to the fact that the manager had his training in one department and knows little of the other departments or their relative importance to the entire scheme of the organization.

This naturally throws the business out of balance and the factory end can very nicely overcome the evil by showing a disposition to consult and work with those in authority with a view to bettering the working conditions throughout the plant.

The factory manager can do invaluable work by educating the workmen to endeavor to accept the viewpoint of the executive, because although the management have the right point of view, they cannot themselves be effective unless a majority of the employees look at things in the same light, also it must be borne in mind that in the long run "What is best for all is best for each." Or in the words of the Master, "A House divided against itself is sure to fall."

Someone has said that a standpatter in any business is a man that you can't start. And a progressive merchant is one that you can't stop. The Coachmaker.

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* Address delivered at the annual meeting of the Canadian Paper Box Makers' Association, Hamilton, Ont., June 1921.

British Trade News

From our London Correspondent.

Coal Miners Strike Settled and Engineers Make Peace.

Peace now reigns once more—but unfortunately there is still a little unsettled feeling in the paper industry. All this trouble, expense, misery, loss of markets, and unemployment, arose through the process of reducing wages from war rates down to post war rates as the cost of living falls, and the miners stoppage alone has cost the various industries above £180,000,000 and the Government, in addition, £75,000,000. It is hoped Canada will never have such an experience and such a bill to meet. If the Engineers had joined the miners the loss would have been irreparable. In my experience it is the worst passive strike I have known and the most costly. Paper and other industries were not only on the verge of ruin, but the Government had a special army enlisted, as well as calling up Reserves, to meet possible exigencies.

Paper Workers Face the Music.

But fortunately all trouble is now over and the Government has voted £10,000,000 as a subvention in aid of the coal-mining industry. Once an industry begins to tamper with wages nothing but discontent may be anticipated. The British paper trade today is facing the music — at least the workers are. The mills have now posted notices intimating that the reductions will take place, but a ballot of the workers over the difference of a cent is against a reduction. Every one is waiting now to see what will the next move of the Workers' Unions. They have poor material to fight on and a poor case with very little sympathy in support of it. Indeed since the coal strike started, 3 months ago, paper mill workers and those in the allied trades handling papers have been drawing reduced wages because of the short time worked, and the unemployment was a heavy drain on the finances of the Unions and the Government. So that looking at the mill owners intentions to reduce wages in three stages of 4 cents an hour, 3 cents, and 3 cents in the third place when cost of living falls 15 points in each case, they are not asking too much and it remains to be seen now what reception the mill notices will receive.

The Outlook.

Today prices of papers are fluctuating and below the cost of production owing to foreign competition and the want of more life in the market. Mills are also on short time and many are closed, and pulp sellers find that buyers are overstocked as a consequence. There is, as a result of present conditions, no market for pulp, a lifeless market for paper at home and abroad and a feeling of uncertainty prevailing all round. That is the position now, but with the coal strike over a period of activity is anticipated. But it will take some time to get coal in circulation amongst the industries, notwithstanding the fact that some of the pits produced within the last few days 1,000 tons a day. Many markets have had stocks depleted since the strike started and with a revival in all industries those who are in a position to know fuel that a demand for paper will eventually come about. A mill owner said to me the other day that it may be two or three weeks before some of the paper mills can get going again. In all probability they would then run short time and it would not be until October before they would commence to feel their feet. At present there were not enough orders to keep the machinery running if they had plentiful supplies of coal, but if he believed buyers would have to replenish their stocks. When trade became normal. They had refrained from buying to keep prices down, then the coal strike set in upon them and with a settlement — and a reduction in prices — paper will ultimately find an outlet which will benefit mills and pulp sellers alike.

A New Mill.

Mr. Shirley W. Cropper, the chairman of the Coldthrop Board and Paper Mills, Ltd., presided at the third annual meeting of the company the other day. He said that the new mill they had in course of erection, would make their plant the most modern and efficient of its kind in the country, capable, when trade revived, of competing for business on the most favorable terms and under the most efficient conditions. Their extensive buildings and the considerable plant involved were fast approaching completion, and the directors had reason to hope that everything would be in running condition well before the end of 1921.

Safe-Guarding Industries Bill.

During the past few days this Bill has been considered by the House of Commons Committees, but up to the present the efforts of the papermakers to get paper included in it has not been successful. If they should succeed it is very likely only Finland and Germany would be affected, as the competition of these countries are being felt most of all in the British market. Scandinavians, I am told, are also complaining of Finnish-German underselling, owing to the debased rate of exchange.

Obituaries.

Death has removed some familiar old figures from the paper industry and amongst them is Mr. Walter Baldwin, a well-known paper agent, of London. Mr. Joseph Castle, manager for 33 years of the Oxford University Press Paper Mill; Mr. George Crabb, who strange to say, was at one time associated with Mr. Walter Baldwin; Mr. S. H. Holman, paper agent, London, and Col. Thomas Mitchell, lately principal of Mitchells, Ashworth, Stansfield & Co., Ltd.

Notelets.

Groundwood is still selling at £5 a ton in the British market — that is if prices and as market may be said to be in existence.

Some good shipments of pulp are reaching England from Canada. Two weeks ago 22 tons of groundwood (dry) valued at £729 was landed at Manchester. Today mechanical dry pulp is £10 a ton for prompt delivery for anyone who wants it.

Congratulations to Mr. Burholt on his appointment as buyer and manager of the mills department of the Lindenmeyer and Johnson Paper Co., Ltd.

Wrapping papers are in a dull season and makers are complaining bitterly of the want of trade.

Though some of the publishers in London complain of the price of paper, which, they say, added considerably to their cost of production, they have all paid good dividends to their shareholders for the past year.

It is rumored that outside trade and financial interests are backing a project to establish a morning paper in New London, Ct.

Informants did not disclose the identity of the promoters, but intimated that outside capital of substantial amount and experienced newspaper men are interested in the proposition. Since suspension of the Telegraph, New London people have had to rely on papers from cities of a considerable distance. New London has two dailies in the evening field, the Globe and the Day. — The Fourth Estate.

The Don Valley Paper Mills, Ltd.

By A. R. R. JONES.

Located in the Don Valley about four miles from the very heart of the business district of the city of Toronto, the plant of the Don Valley Paper Mills, Ltd., can boast a situation that, for picturesqueness, is extremely hard to surpass. Indeed so picturesque and of so sylvan in character is the location that it is hard to believe that it is only such a short distance from the corner of King and Yonge Streets, Toronto's busiest point. Yet such is the case.

Although there have been three mills erected near the site of the present one under the auspices of this concern. The first mill, which was built in the year 1825, near what are now the Thorncliffe stables, was burned down. The second, erected after the first had come to its untimely end, was located near the site of the Don Valley Brick Works, which are adjacent to the present Government House of Ontario, and is now disused. The third, located about an equal distance between the second and the site of the first, is the mill that is now operated by the Don Valley Paper Mills, Ltd.

The early history of this concern is one of quite exceptional interest. It was not exactly the first to make paper in Canada. For, as a fact, the first Canadian paper mill was established in St. Andrew's, Quebec, in the year 1803—not far short of a century and a quarter ago. This was followed, fifteen years later, by the establishment in Halifax, Nova Scotia, of the second Canadian paper mill. But in Ontario—Upper Canada, as it was then called—the establishment of paper mills was not much longer delayed. In the year 1825 two paper mills were built in Ontario, and they started operations almost simultaneously in that year. One was located at a village known as Crook's Hollow. The other, situate on the Don river, about four miles from Toronto, was the ancestor, so to speak, of the mill operated by the Don Valley Paper Mills today. The Don river was described, at that time, as being a beautiful, clear stream of water, abounding in trout—a description which, perhaps, does not fit it very aptly at the present time.

Mr. J. C. Worts is president of the Don Valley Paper Mills, Ltd.; Mr. W. Davis is vice-president; Mr. H. St. J. Jarvis is secretary-treasurer; and Mr. C. Nelson Gain is superintendent. The employees number about sixty. The well-arranged plant includes four 450 lb. beating engines and one refining engine; two washers and one rotary boiler; and one eighty-four inch Harper-Fourdinier machine. The widest trimmed sheet turned out is one of seventy-two inches. Water, steam and electric powers are in use. The products of the plant comprise cover papers, post cards, posters, white and colored Bristols, sulphite and Manila envelopes. The plant's capacity is one of 20,000 lbs. every twenty-four hours.

The raw materials used consist of groundwood, sulphite, bleached and unbleached, and soda pulp. The products are marketed in Toronto, Hamilton, Winnipeg, Vancouver, Calgary, Quebec City, Montreal, St. John, N.B., and Halifax, N.S. Up till the first of this month, the plant was running full time. Now it is running about four days a week. The immediate prospects for business are not quite so bright as might be wished. This is, in a measure, owing to the present printers' strike which is exercising so detrimental an effect on all too many departments of the paper business, as a whole. However, as stocks are very low, it should not be too long before business picks up again. And, when

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The picturesque Plant of the Don Valley Paper Mills, Ltd., Toronto.

Technical Section

REVIEW OF RECENT LITERATURE.

A-3. Fiber from Seaweed. Y. HASHIMOTO, English patent 153,804. Jan. 13, 1920. Fibers suitable for papermaking and as a cotton substitute are obtained from "sugamo" (**phyllopadix scouleri,** Hook). The exterior of the seaweed is a gunlike material, which cannot be separated by mechanical means, but is removed by boiling the raw or dried seaweed with milk of lime (10 percent CaO) for half an hour to one hour, boiling with a solution of sodium bisulphite of 1° Bé. (sp. g., 1.007) for twenty to fifty minutes and rubbing away the softened crust.—C. J. W.

A-13. Testing Dyes. World's Paper Trade Review. lxxv, 8, p. 706. A description of an accurate method whereby manufacturers can test their dyestuffs without buying miniature papermaking machinery for the purpose.—A. C.

A-14. Instrument for Measuring the Finish of Paper. Paper Industry, ii. 12, 1846. Describes the glarimeter, an instrument used in measuring the gloss in paper.—A. C.

A-14. Tensile Strength Tester. World's Paper Trade Review, lxxv, 5, 468. A description of an instrument manufactured by T. J. Marshall & Company and used for testing the tensile strength of paper.—A. C.

A-15. The Testing of Sulphite Pulps. By E. G. MILHAM, **Paper Industry,** ii. 12, 1837. A description of the methods used in testing sulphite pulps.—A. C.

A-0. Treatment of Liquids Containing Sulphate of Lime. Can. patent 207,957, The A/S De Norske Saltwerker, assignee of HENRIK JANSON BULL, both of Bergen, Norway, Jan. 25, 1921. In the process of heating liquid containing compounds of calcium, the method of preventing the formation of layers containing sulphate of lime on heating surfaces in contact with the liquid, which consists in introducing into the liquid an agent capable of presipitating crystals of sulphate of lime and maintaining the crystals formed in a state of mobile suspension during the heating operation.—A.P.-C.

A-0; R-12. Application of Chemical Tests to Paper Mill Cost. E. T. A. COUGHLIN. **Paper Mill,** xliv, 11 (March 12, 1921).—Coughlin shows how the proper use of chemical tests in the paper mill will materially reduce the cost of the finished product.—C. J. W.

A-0. Chemical Standards. World's Paper Trade Review, lxxv, 5, p. 432. An article by Doctor MacDonald in which he deals with the two chief requirements of the papermaker, namely, fuel and fibrous raw material.—A. C.

A-0. Chemistry of Raw Material. Paper Maker and British Paper Trade Journal. Review of a paper on "Chemical Standards in the Commercial Valuation of Raw Materials" read at a recent meeting of the Technical Section (Aberdeen Area) of the Paper Makers' Association held at Robert Gordon's College.—A. C.

B-9. Rich Pulpwood Lands in Washington. World's Paper Trade Review, lxxv, 5, p. 438. W. W. J. Weigle, of Seattle, forest supervisor of the Snoqualmie National Forest, has issued an exhaustive report, stating that personal production of 300,000 tons annually of newsprint paper, insuring continued operation of at least six woodpulp industries is possible through the private, State and federal resources of the Puget Sound Grays Harbour Timber districts tributary to Seattle.—A. C.

D-4. Magazine Grinder. Can. patent No. 208,790, PEDER CHRISTIAN SCHAANNING, Vastre Holman, near Kristiana, Norway, Feb. 22, 1921.—A.P.-C.

D-0. Mechanical Pulp. World's Paper Trade Review, lxxv, 5, p. 452. An article on mechanical pulp manufacture, taking in some of the more important points bearing on the subject.—A. C.

E-2. Sulphite Liquor Concentration. E. C. R. MARKS. English patetnt 154,355. Sept. 5, 1919. Concentration is effected in two or more stages by repeated circulation of the liquid as a thin film over a surface heated by the evolved vapor after compression of the latter to raise it ao the necessary temperature, the solution being subjected to similar temperatures and pressures in the different stages, for the purpose of decreasing the total surface required for a given duty. The process is designed especially for liquids, the concentration of which increases the viscosity, without affecting the boiling point appreciably.—C. J. W.

E-5. Sulphite Cooking Process. Can. patent 207,956, The A/S Cellulospatenter, Kristiania, assignee of EINAR MORTERUD, Torderod near Moss, both in Norway, Jan. 25, 1921. In the process of indirect digestion of sulphite pulp, the step which comprises maintaining the digesting liquid under a pressure greater than the pressure due to the gas content at the existing temperature. In the process of indirect cooking of sulphite pulp, the method of preventing the deposition of calcium salts, which comprises filling the digester as full as practicable, and maintaining it full under all conditions of digestion, thereby maintaining a pressure in the digester greater than that due to the gas pressure at any existing temperature.—A.P.-C.

E-5; F-5. Uniformity of Digester Chip Charges. Paper Industry, ii. 12, p. 1840. Weighing experiments indicate that the digester charge is, in most instances, a reliable unit for pulp mill operation, provided the operation is uninterrupted and the soundness and species of pulpwood do not vary. A. C.

E-5; F-5. Pressure Lock for Digesters. AKTIEBOLAGET VAPORACKUMULATOR. English patent 141,708. Apr. 12, 1920. The presure within a digester sometimes exceeds that of the steam supply, and acid is then forced from the digester into the connecting pipes. This disadvantage is overcome by the insertion of a pressure lock between the acidproof valve nearest the digester and the nonreturn valve nearest to the steam supply. The pressure lock consists of a piece of acidproof tubing arranged vertically and is connected by means of a pipe, having an open valve, to the source of pressure of steam, water or air, greater than the maximum attained in the digester. When the pressure within the digester temporarily rises above that of the steam supply, acid liquor flows through into the pressure lock and closes the nonreturn valve. The acid is thus prevented from entering the steam supply pipes and rises in the pipe connected with the pressure lock until checked by the greater pressure therein. When the pressure within the digester becomes normal, the acid liquor is forced out of the pressure lock back to the digester, thus allowing the non-return valve to reopen.—C. J. W.

F-4. Evaporating Liquids or Solutions. Can. patent 208,203, AKTIEBOLAGET INDUNSTARE, assignee of NILE OLOF SODERLUND, both of Goteburg, Sweden, Feb. 1, 1921. The method of concentrating liquids or solutions of which the viscosity but not the boiling point substantially increases with the concentration, which consists in evaporating the solution by causing the same to flow over surfaces heated by the compressed vapor or steam given off from the solution and effecting the evaporation in a plurality of apparatus in successive stages of concentration while employing the same pressure of said vapor or steam in all of said stages.—A.P.-C.

F-5. Indirect Heating for Sulphate Cooking. Can. patent 208,134, ROLF HARALD HULT, Hyltebruk, Sweden, Feb. 1, 1921. The method of indirectly boiling liquor in the manufacture of sulphate pulp, consisting in first leading a heating agent through each of a plurality of parellelly coupled heating elements submerged in said liquid, and until the temperature has been raised to about 100° to 105° Cent. and then connecting said heating elements in series and lending a heating agent through said serially connected elements until the temperature of the liquid has been raised to 138° Cent.—A.P.-C.

F-5. Rinman Modification of Sulphate Process. BROR N. SEGERFELT. **Paper Mill,** 44, 17, and **Paper Trade Journal,** lxxii, 16 (April 14, 1921). The wood is cooked with weak caustic solution with the aid of a reducing material, preferably mercury, at a temperature not exceeding 170°. The waste liquors are concentrated, mixed with lime and distilled at about 500° Cent. This eliminates the bad odor, gives as good a yield of pulp as by the ordinary method and gives good yields of by-products; methyl alcohol 50 pounds per ton of pulp, acetone, 50 pounds, gasoline substitute, 100 pounds, heavy oils, 200 pounds. C. J. W.

F-0. Report of the Sulphate Pulp Committee. CARL MOE. **Paper Mill** xliv, 17 (April 23, 1921), and **Paper Trade Journal,** lxxii, 16 (April 14, 1921). Discussion of Griffin's method which recommends a miniature causticizing test for evaluation of lime to be tested.—C. J. W.

H-4. Control of Chlorine Gas. L. H. GOEBEL. **Paper Mill,** xliv, 7 (Feb. 12, 1921). A general discussion of the properties of liquid chlorine, its shipment in drums and tank cars and its uses in the paper mill. —C. J. W.

H-4. Manufacture of Electrolytic Bleach. C. A. BLODGETT. **Paper Mill,** xliv, 10 (March 5, 1921). Description of the Allen-Moore cell and the installation at the Eastern Manufacturing Company.—C. J. W.

H-0. Notes on Bleach and Bleaching. FRANK D. LIBBY. **Paper Mill,** xliv, 7, (Feb. 12, 1921). General discussion of the manufacture and the methods of bleaching different kinds of paper stock.—C. J. W.

K-2. Utilization of Waste in the Paper Mill. J. S. ALLAN. **Paper Mill,** xliv, 8 (Feb. 19, 1921, also **Worlds Paper Trade Review,** lxxv, 4, p. 312. Special attention is given to the esparto mill. Allan discusses the grass washing system, substances extracted by caustic soda and the waste caustic lime; the chief waste in the breaker house is an excessive loss of fiber during washing. Broke should be classified in order to receive the proper treatment in repulping. The white water waste amounts to about 6¾ tons per week.—C. J. W.

K-4. Cooking Process for Straw. H. OEXMANN. German patents 306,325 and 309,259 (July 31, 1917 and May 25, 1918). Before treatment with strong alkalis, the raw materials are treated with solutions of weak alkalis, e.g., lime. 100 Kg. straw is boiled first with 400 to 600 liters of water and 5 to 6 Kg. of quicklime, and then with 4 Kg. of caustic soda. The product is equal to that obtained by using 9 to 10 Kg. of caustic soda only. The treatment with the weak or with the strong alkalis or both may be effected at a temperature below boiling point.—C. J. W.

K-4. Manufacture of Halfstuff. K. SCHOLZ, B. P. von EHRENTHAL, and M. von HALLE. German patent 325,918. March 21, 1917. Fibrous materials, as hemp, bagasse, tobacco stalks, jute, bamboo, etc., are treated in the usual manner employed in digesting flax by the sulphite process, except that the alkali content of the sulphite liquor is increased three or four times the usual amount and is then digested with alkali.—C. J. W.

K-7. Improved Tub Beater. World's Paper Trade Review, lxxv, 5, p. 434. A British patent has been granted to W. J. Mellersh Jackson, following a communication from the Griley-Unkle Engineering Compan yfor an invention relating to improvements in tub beaters.—A. C.

K-7. Beating Improvements by W. B. CAMPBELL. From **Pulp and Paper Magazine. World's Paper Trade Review,** lxxv, 8, p. 704. Developments which modern papermaking is forcing upon beater design and a discussion of recent researches on the subject of beating and the lines along which future research may well be pursued. A. C.

K-7. Developments in Papermaking. World's Paper Trade Review, lxxv, 4, 298. A paper on the development of the beating engine and a discussion of the same.—A. C.

R-1. Papermaking in Peru. World's Paper Trade Review, lxxv, 4, 304. The translation of a bill under discussion in the Peruvian chamber of deputies, having for its object the cheapening of paper in Peru. In one of the articles it is proposed to take the import duty of papermaking machinery and materials. A.C

K-7. Treatment of Vegetable Fibers. GILLET ET FILS. English patent 150,665. Dec. 12, 1919. Vegetable fibers are made to resemble wool both in physical properties, such as feel and appearance, and in chemical qualities, such as behaviour toward dyes, by impregnating them with the products of hydrolysis of certain proteins, such as casein, albumin and gelatin, by mineral acids. Hydrolysis of the protein may be effected either before treatment of the fiber or on the fiber; in either case the fiber is afterwards washed with water, dilute acid, dilute alkali, or a solution of a salt, such as sodium bisulphate, ammonium sulphate, or sodium phosphate, and may be subsequently treated with formaldehyde or other protein precipitant.—C. J. W.

K-10. Sizing Process for Paper. R. JENNISON and J. P. de Chanaz. English patent 154,366. Sept. 9, 1919. Woodpulp or similar cellulosic material is treated with 20 percent of starch and 1 to 5 percent of caustic soda and beaten for thirty minutes to eight hours. The caustic soda is neutralized by the addition

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PULP AND PAPER NEWS

Operations have recently been resumed at the plant of the Mattagami Pul pand Paper Co. at Smooth Rock Falls, Ont. There are not many signs as yet of improvement in the market for sulphite pulp, but officials of the Company are of opinion that the present depression will not last much longer, and a supply is being accumulated in readiness for the much-to-be-desired revival of business. The plant is not at present working to capacity, but still the operations are of a substantial kind.

Last week, the commission, composed of representatives of the pulp and paper manufacturing companies and the trade unions of the industry, which is investigating conditions in the industry, with a view to settling matters which led to strikes this spring and summer, passed through Toronto from Iroquois Falls to Three Rivers, Que. The commission comprises three representatives of the employing companies, Messrs. Burke and Carey, presidents of the larger unions of the industry, and Mr. John Foster, of the Montreal Trades Council. It was accompanied by some members of the New York State Legislature, and, after the termination of its visit to Three Rivers, it will spend some time in a survey of conditions in New York State.

No settlement of the printers' strike in Toronto, which has been in progress since June 1, is in sight. Thus far, the strike has cost the Typographical Union something like $130,000. The married strikers are being paid $25 a week, and the unmarried $20 a week, by the Union. The local Union's disbursements are at the rate of $16,000 a week.

The delegates to the convention of the International Stereotype and Electrotypers' Union, held in Toronto last week, voted to submit to the membership in Canada and the United States a proposition to make a special assessment of two per cent. of the weekly earnings of each member towards financing the forty-four hour week campaign. According to a statement of an official, a number of stereotypers are on strike in the United States for the forty-four hour week and the Canadian Unions will make a demand for the forty-four hour week on the termination of their present agreements. Two stereotypers' locals in Ottawa are at present on strike.

The strike of the book-binders employed in the different job printing offices in Ottawa ended, last week, in the capitulation of the strikers. As was the experience of the bookbinders in Toronto, however, many of them have been unable to get back their old jobs, in consequence of their places having been filled, and are now out of work. Those who have been fortunate enough to get back their old positions have gone back on the forty-eight hour week basis at $35 a week.

At the Conservative picnic, organized annually by Mr. T. Herbert Lennox, M.P. for North York, and held at Jackson's Point, near Toronto, last week, Mr. G. Howard Ferguson, the Provincial Conservative leader made a vigorous attack on Premier Drury, in connection with the famous Backus deal. He condemned the Premier's action in the matter in almost unmeasured terms and declared the whole transaction was one of the most improvident in the history of the Province of Ontario. He asserted that E. W. Backus had got a large tract of the public domain at his own figure—"a vast empire of forest wealth for which he is to pay the people about a third of a cent per cord at a time when pulpwood was selling as high as $6.00 per cord." Mr. Ferguson decided the idea that the transaction could be called a public sale, and asserted that, which it was true that there were three other alleged bids, "the Prime Minister knows that two of the bids came from Backus' own partners and the third from his paper broker."

Mr. Charles V. Syrett, manager of the Victoria Paper and Twine Company, and president of the Canadian Vegetable Parchment Company, Ltd., addressed the Kiwanis Club of Toronto, last week, on the growth of the paper industry. After sketching the history and growth of the industry from its inception in Canada, he stated that at present the industry has a very keen eye on export markets, particularly in the sister Dominions. "We should", said Mr. Syrett, "strive, above all things, to do as much business, along reciprocal lines, within the British Empire as we possibly can, with merit, honor and service" as our watchwords.

It is, in the highest degree, satisfactory to learn that the export business of the Wayagamack Pulp & Paper Company, Ltd., is evincing very gratifying signs of revival. During the last few weeks, orders for paper have been received from Great Britain, South Africa and Japan. As kraft paper is in such great use by merchandizing concerns in general, these orders, following reports that business conditions in Great Britain and elsewhere are gradually improving, may be taken as an encouraging sign of commercial revival.

The Ontario Government Forestry Branch is inserting in the newspapers a very effective series of advertising articles designed to enlist the co-operation of citizens generally in a Province-wide campaign to prevent forest fires. The key-note of each article is "Save Ontario's forests—they're yours!"

At their international convention in Toronto, Stereotypers and Electrotypers refused to support a proposal that their Union enter into an arbitration agreement with Newspaper Publishers' Association. The committee which dealt with the proposal reported against it, and the committee's report was supported when it was presented to the convention.

The organizer of the Toronto Bookbinders' Union made an appeal to the Toronto Trades and Labor Council for financial assistance for that Union which, he stated, was in serious difficulties and many of its members suffering distress. He pointed out what has been before stated in this column—that, while some member had returned to work, many are still out of employment. This request brought forth very pointed objections from some of the delegates. One of them stated that the stonecutters, who had been out on strike for many weeks against the "open shop" principle, had received no financial assistance. Another observed that "the bookbinders went out on strike with the printers. We are told that the printers possess an immense strike fund, which is growing in spite of the strike. If an organization whose interests are identical cannot help them, how can we?" The chairman pointed out that the Council had no funds for the purpose.

The Toronto District Trades and Labor Council decided, at a meeting last week, to ask the Trades and Labor Congress officials to appear before the Minister of Justice to demand an investigation of the alleged boycott threatened by the Toronto Typothetae against employers who sent their work to shops conceding the forty-four hour week.

Business doing by the Laurentide Company is stated to be very satisfactory, especially when considered with regard to business conditions generally. The Company has been happy in enjoying immunity from strike troubles.

Mr. Edward Beck, in charge of publicity for the Canadian Pulp and Paper Association, who has been in Europe for a couple of months, investigating the industry situation in Scandinavia, will sail for Canada by the Empress of France, on the 4th of next month, with his son, Mr. Frederick Beck, who has accompanied him on his trip.

It is expected that a daily paper will shortly be published in North Bay, Ont. The Town Council of North Bay has agreed to rent the toy factory, a building owned by the municipality, to the Daily Nugget, of Cobalt, for three years from the 1st of next month, and it is thought that the paper will be operating in a month from that date. The Daily Nugget has been published as a daily for some twelve years.

Mr. William, alias Billy, Whyte, has sent us a card from Japan and extends his greetings to the trade through the Pulp and Paper Magazine.

Mr. T. H. Nevill, for several years general superintendent of the Trorold and Tonawanda plants of the Beaver Co. is now Superintendent of the Board Mill of the Brompton Pulp and Paper Co. at East Angus. He takes the place of Mr. L. N. Austin, who resigned recently. Another new-comer in East Angus is Mr. William Slocom from Grand Falls, Newfoundland. His position is boss machine tender.

Meetings are being held this week in Montreal, looking to a solution of the financial problems of the Riordon Company. It is too early to make any statements.

The Laurentide Nursing Home was officially opened on July 15. Provision is made for the development of a fully equipped 100 bed hospital.

Mr. H. Biermans, general manager of the Belgian Industrial Co., has returned from a business trip abroad.

Frank Stoughton has been promoted to Tour Boss at the Abitibi mill. He takes the place of George Duers, who has been transferred to the new machine room which contains the biggest paper machines in the world--232" wide.

Although the Brompton Pulp and Paper Co. has more than earned the common dividend heretofore distributed, the directors have decided to retain this additional cash resource under present conditions.

The publication of the St. John, N. B., *Standard* has been temporarily suspended, pending a reorganization.

Mr. Frank Symonds, representing W. J. Gage and Co., Toronto, visited Windsor, N. S., last week.

In keeping with the trend of the times and the force of conditions, the Laurentide Company has finally decided to reduce wages generally about 10 per cent. The order went into effect on July 14.

The Panuke Pulp and Paper Company, Windsor, N. S., has called a meeting to consider the authorization to issue the first mortgage bonds, not to exceed $50,000.

(Continued from page 289)

it does, the good reputation which the Don Valley Paper Mills, Ltd., has justly earned for quality and efficiency of workmanship cannot fail to stand it in good stead.

The ground belonging to the concern covers about seven acres. Its shipping facilities are excellent, as it has its own siding to the Canadian National Railways, and employs motor trucks for city deliveries. The sales office is at room 714 Dominion Bank Building, Toronto. It should be added that although the concern belongs to the same estate as the Don Valley Brick Works—namely, the Robert Davis estate—the two companies are quite separate and distinct.

OTTAWA NOTES.

A largely signed petition protesting against the yards of Export Lumber Company on Preston street is no wbeing considered by the Board of Control. The petition claims that the owners are not observing the regulations which prohibit lumber from being piled within one hundred feet of a building. It is also claimed that the piles constitute a fire menace and increases the fire insurance rates.

Hon. Erskine Henry Bronson, pulp manufacturer of Ottawa, who died October 19th. 1920 left an estate of over one million dollars. This is shown by his will which has been filed at the court house, Ottawa, for probate.

A damage action taken in the Superior Court of Quebec by Mr. Arthur Lerke against J. R. Booth, Company, Limited, has been settled out of court on the basis of Mr. Lerke receiving $1,500 in settlement of his $3,000 claim. Lerke was injured while felling a tree in the Kipawa district in January last.

Sir George Foster, Minister of Trade and Commerce, has forecasted at Ottawa that the Canadian Government would shortly confer with the commission to be appointed by the United States in regard to the prohibiting of the export of pulpwood from Crown lands. Just what attitude the Canadian Government will take has not yet been announced, as Sir George said that no definite line of action would be taken till the U. S. Commission was finally appointed.

TO BUILD PAPER MILL AT PRINCE RUPERT.

The newly-formed Prince Rupert Pulp & Paper Co. Limited have taken over the Emerson saw mill at Prince Rupert, B.C., and its timber limits in that district, covering approximately 2,000,000,000 feet of timber and several water powers as well. The saw mill is located on Prince Rupert Harbour and has a cutting capacity of 40,000,000 feet per year. The plans of the Prince Rupert Pulp & Paper Co. call for the installation of a paper mill with a capacity of 200 tons a day, which will be located alongside the existing saw mill. The first unit being installed is a 40-ton sulphite mill and the construction of the plant is under the direction of the Management Engineering & Developing Co. at Dayton, Ohio. It is expected that the first unit will be completed early next year. The operations of the saw mill have hitherto been confined entirely to spruce but on completion of the sulphite plant, the saw mill will market only the upper grade of clean spruce, the lower grades all being used in the production of sulphite pulp. John Emerson is president of the company and J. A. Ward Bell is general manager. T. H. Watson, of Toronto, is associated with the company.

(Continued from page 791)

of alum or other aluminum salt, the pulp is diluted with water, passed through a papermaking machine, and the paper dried. For transparent greaseproof paper, the paper web is incompletely dried, and then friction-calendered until transparent. If more than 20 percent of starch be used, the strength and the transparency of the paper are increased.—C. J. W.

K-10. Treating Asphalt for Sizing Paper.—Chem.-Analyt. Lab. SCHICK and HORAK. German patent 325,780. July 7, 1118. The melting point of asphalt is lowered by the addition of a terpene or an aliphatic or aromatic alcohol. For the impregnation of yarn, fabric, paper, cardboard, etc., asphalts containing 0.1 to 1 per cent of fusel oil are suitable.—C. J. W.

K-12. Apparatus for Drying Sheets of Paper. O. MINTON. English patent 154,120. March 26, 1920. Paper is dried by passing it without tension through a liquid seal into a vacuum chamber, over numerous rollers, some of which are immersed in a heated neutral fluid, and out through the same or a different liquid seal. Mercury may be used for the sealing liquid and for the heated neutral fluid. Paper having "cockled" effects may also be produced by this method and the drying temperature may be low or high.—C. J. W.

K-12. Press Rolls. AKTIEBOLAGET KARLSTADS MEKANISKA VERSTAD. English patent 149,970. Aug. 9, 1920.—C. J. W.

K-12. Cylinders for Drying Food, Paper, etc. J. MCINTYRE and J. MILNE & SON, Ltd. English patent 154,508, April 12, 1920. The ends or plates covering the ends of the cylinders are coated with glass or with vitreous stove enamel, in order to facilitate cleaning. C. J. W.

K-12. Briner Economizer for Ventilation of Machine Room. W. H. HOWELL, Jr. **Paper Mill,** xliv, 17 (Apr. 23, 1921), and **Paper Trade Journal,** lxxii, 16 (April 14, 1921).—C. J. W.

K-12. Speed Interlock as Applied to the Paper Machine. F. G. WARBURTON. **Paper Mill,** xliv, 6 (Feb. 5, 1921). Discussion of sectional motor drives of paper machines, especially as installed with the new Laurentide machines. C. J. W.

K-12. Drying Paper, Temperature Control and Heat Conservation. F. C. FARNSWORTH. **Paper Mill,** xliv, 9 (Feb. 26, 1921). Description of the Farnsworth forced steam circulation system. C. J. W.

K-12; Q-0. How to Eliminate Condensation in the Paper Mill. By H. F. SMITH. **Paper Industry,** ii. 12. The several factors to be considered in the prevention of condensation, as well as the savings resulting from the use of a gypsum roof deck on a typical mill.—A. C.

K-14. Sheet Feeding Machine. Can. patent 207,757, The Dexter Folder Co., assignee of CARL E. CHRISTOPHEL, both of Peary River, N.Y., U.S.A., Jan. 18, 1921.—A.P.-C.

K-15. Coating Process for Hygroscopic Material. M. AROSIO. English patent 131,911. Sept. 28, 1919. In providing hygroscopic material, such as wood, vulcanized fiber or paper, with an adherent impermeable coating of a substance such as celluloid or cellulose acetate, the material is first dried thoroughly and then saturated with the solvent subsequently to be used for the coating substance. It is then steeped for a short time in a weak solution of the coating substance, containing also a suitable proportion of mineral coloring matter, withdrawn, and allowed to dry. C. J. W.

K-21. Roofing Paper Mopping Machine. Can. patent 208,052, STEVEN TROY and LEW JACOBSEN, Feb. 1, 1921. A roofing paper mopping machine of the class described, comprising the combination with a suitable frame, of a tank adapted to hold a fluid waterproofing material, a mopping roller rotatably mounted above the tank to dip the lower part of it into the waterproofing material, a drive roller rotatably mounted parallel to and immediately above the mopping roller, said drive roller being of less width than the paper to be mopped, means for driving the mopping roller from the drive roller, means limiting movement of the drive roller towards the mopping roller short of contact therewith, and means for mounting a roll of paper adjacent the drive on the machine that the paper may be delivered over and under the drive rollers.—A.P.-C.

K-23. Drying Apparatus for Varnished Paper. J. W. WILSON. English patent 154,746. Oct. 15, 1919.—C. J. W.

K-23. Waterproof and Felted Sheets. World's Paper Trade Review, lxxv, 5, p. 430. Some suggestions from an invention by Lester Kirschbraun for improvements in the manufacture of waterproof and felted sheets.—A. C.

K-23. Photographic Paper.—World's Paper Trade Review, lxxv, 8, p. 690. An article describing the process and care of its manufacture.—A. C.

K-0. Perishing of Paper in Indian Libraries. Paper Maker and British Paper Trade Journal, lxi, 3, p. 376. Paper in Indian libraries, especially in plain stations such as Calcutta, Madras, and Bombay, will not withstand the climate, perishes easily and must be prepared in a special way to be preserved.—A. C.

L-4. Paper Cup Forming Machine. Can. patent 207,740, The Vortex Mfg. Co., Chicago, Ill., assignee of GESARE BARBIERI, Washington, D.C., both in U.S.A., Jan. 18, 1921.—A.P.-C.

L-5. Saccharification of Cellulose. A WOHL and H. KRULL. **Celluloschemie** ii, 1-7 (1921). In laboratory experiments cotton yielded 97 per cent. of the theoretical amount of reducing sugar by a preliminary liquefaction (primary hydrolysis) with fuming hydrochloric acid, followed by a second hydrolysis by boiling with dilute acid. Results obtained with a variety of products indicate that the method might be employed for the determination of cellulose.—C. J. W.

L-0. Method of Heating Printed Sheets. Can. patent 207,821, JAMES E. DOYLE, Cleveland, Ohio, U.S.A., Jan. 25, 1921. Means for preventing offset in printing upon sheets carried upon a printing press comprising a plurality of incandescent heating units exposed above and arranged below, so as to extend across the path of movement of said sheets, and means whereby the functioning of said units may be separately controlled.—A.P.-C.

L-0. Food Product from Wood. Can. patent 208,581, The Burgess Laboratories, assignee of HOWARD F. WEISS, both of Madison, Wis. U.S.A., Feb. 15, 1921. A stock food comprising the composite sugar of hydrolysis of Western larch wood, including galactose in a concentrated state and in admixture with finely divided hydrolyzed larch wood residue.—A.P.-C.

M-4. The Proper Handling of Belts. Paper Industry, ii. 12, p. 1855. Comment on an article published in the December issue of the **Paper Industry**, entitled Stopping Belt Slip with Cutting Edges.—A. C.

M-6. Application of Electricity to the Paper Mill, by E. E. FULLER, A.M.I.E.E. **World's Paper Trade Review**, lxxv, 9, p. 774. The various sections of the paper making plant with information regarding the power required to drive them with curves which show the variations in load.—A. C.

M-0. Power Plant Management. By ROBERT JUNE. **Paper Industry,** ii. 12, 1850. The fourth article on ash and coal handling equipment. -A. C.

M-0. Mechanical Standards. Paper Industry, ii. 12, p. 1856. A report of committee on Mechanical Standards of the Technical Section, Canadian Pulp and Paper Association.—A. C.

N-6. Steam Economy in Paper Mills. R. W. LEEPER. **Paper Mill,** xliv, 17 (Apr. 23, 1921), and **Paper Trade Journal,** lxxii, 16 (April 14, 1921). C. J. W.

P-1. Engine Guarding and Engine Stops. Paper Industry, ii. 12, p. 1841. An article on safety conditions in the engine room, prepared by the engineering section of the National Safety Council.—A. C.

Q-2. Plant Layout. Engineering News Record, lxxxvi, 12, p. 505. The report submitted at the annual convention of the Concrete Institute embodies description of and comparative costs upon seven fundamental types of concrete plants.—A. C.

Q-4. Reenforced Concrete in Paper Mills. World's Paper Trade Review, lxxv, 5, 466. A discussion of the important development of reenforced concrete for use in paper mills.—A. C.

R-1. Pulp Manufacture in Australia. World's Paper Trade Review, lxxv, 5, p. 405. An interesting development of the Queensland Pine's Company's woodpulp plant at Yarraman is proposed.—A. C.

R-2. Two Related Industries. Paper Maker and British Paper Trade Journal, lxi, 3, p. 373. A book issued by F. C. Huyck and Sons, of Albany, N.Y. The story of felts from the beginnning of their manufacture and how dependent is the great industry of papermaking on the product, papermakers' felt. —A. C.

R-4. Woodpulp Contracts. World's Paper Trade Review, lxxv, 4, p. 366. The view of a mill manager on how British papermakers are handicapped.—A. C.

R-5. German Newsprint. World's Paper Trade Review, lxxv, 4, p. 310. Observations of W. F. Ehrnholm, of the New York Overseas Company during his tour of England, Scandinavia and Germany, on the conditions of manufacture and export.—A. C.

R-5. German Paper. World's Paper Trade Review, lxxv, 5. German newsprint in enormous quantities is going to Spain, Italy, Central Europe, South America and elsewhere at prices with which British manufacture cannot compete and is proving a great menace to the industry in England.—A. C.

R-7. Finding the Employee, by PHILIP C. PACK. **Paper Industry,** ii. 12, 1875. It is saving for an organization to have a system installed which allows each man constant communication with every other man.—A. C.

R-9. Tariff Hearing. Paper Mill, xliv, 7 (Feb. 12, 1921). Arguments of manufacturers for duty on all grades of paper. C. J. W.

R-9. Belgian Newsprint Free. World's Paper Trade Review, lxxv, 4, p. 358. By a decree issued by the Belgian Minister of Economic Affairs, dated December 15, 1920, newsprint paper is exempted from the requirements of an export license. A. C.

R-11. Paper Laboratory of Bureau of Chemistry. Paper, xxvii, 18 (Jan. 5, 1921). A report of the Bureau of Chemistry on the paper work done in its paper laboratory mentions that specifications for blue—and brown print papers for various government departments were drawn up, and specifications for the preparation of water-resistant papers for baling have been published. Work is being done on the testing of paper products, fiber-board, and water-resistant wrapping papers. Factory scale experiments have been made on the use of the adhesives from corn cobs, the production of which was described in 1919. Investigations of the suitability of different types of containers for the storage of baking powders and of dehydrated vegetables and fruits have been completed and prepared for publication.—A. P.-C.

R-12. Box Board Costs, by E. G. CLARKE, **Paper Industry,** ii. 12. The organization and fundamental points necessary to a perfect cost system.—A. C.

R-12. Box Board Costs. E. C. CLERKE. **Paper Mill,** xliv, 7 (Feb. 12, 1921). Application of a cost system to the Richardson Company, Lockland, Ohio.—C. J. W.

R-12. Cost Accounting Fundamentals. B. E. HUTCHINSON. **Paper Mill,** xliv, 6 (Feb. 5, 1921). Its application to the paper industry.—C. J. W.

R-12. Argument for Mill Cost System. Paper Mill, xliv, 7 (Feb. 12, 1921). There are two broad reasons: To ascertain the true manufacturing costs to serve as a basis for fixing the selling price; to eliminate waste by finding where it occurs.—C. J. W..

R-12. Why We Have a Cost System. S. B. COPELAND. **Paper Mill,** xliv, 16, 294 (April 16, 1921).—C. J. W.

R-12. Costs in the Paper Mill. JAMES A. REILLY. **Paper,** xxvii, 14 (Dec. 8, 1920). "The cost system is a methodical analysis and determination of the total outlay involved in material, labor, overhead and all other items included in the process of manufacturing and selling any article." Manufacturing costs should include direct labor, actual material consumed, direct mill overhead (expense not directly chargeable to operation as direct labor or material but as direct cost of operating auxiliary departments such as steam, power, building, expense, general plant, etc.), and indirect mill overhead (depreciation, insurance, all taxes except government and state taxes that are based on income, general administrative expenses, research department, purchasing department, cost department, engineering department, etc.). Interest on investment and additional reserve may or may not be added. Packing and shipping costs may be classed either as part of manufacturing costs, or charged against gross profits. Various uses for manufacturing costs are enumerated, and the method of using them for estimating costs and arriving at net selling price is explained.—A. P.-C.

R-0. Relation of Paper Manufacture to Other Industries. JAMES STRACHAN. **Paper,** xxvii, 18 (Jan. 5, 1921). Review of the relation between the papermaking and other industries, and more particularly the textile industry from which papermaking originated. Papermaking borrowed its first raw materials and several of its processes (cooking, bleaching, loading) from the textile industry; but it is now furnishing it with an ever increasing amount of raw material in the form of artificial silks. The ever increasing expansion of the pulp and paper industries has resulted in great advances from the technical and scientific points of view, and now many products which were useless, and even troublesome, are put to good use. It has also contributed to develop considerably some of the subsidiary industries, such as the manufacture of china clay, alum, metallic wires, and felts.—A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 23rd July.—In conversation this week with a man who is as conversant with the conditions of the Canadian paper trade generally as anyone in the Dominion, the writer was told that, while certain lines exhibit some activity — an activity which, however, is usually spasmodic—the prevailing tone of the market continues on the whole, as it has been for some time, abnormally dull. The authority in question, however, seemed fairly confident that the autumn season would bring with it some improvement in the situation. As has been frequently pointed out, the prevailing depression in the trade has, as regards many lines of it, been accentuated by the strike compositors in Toronto. But, at the same time, it is an incontrovertible fact that, if the strike had to come at all, it could not have come at a moment more opportune for the employing printers than that which was chosen. Had things been humming, the employers would possibly have found an insuperable difficulty in getting out the absolutely necessary work. As it is, with advertising on a diminished scale, and with things generally just dragging along rather than going at full blast, they have been able to make a surprisingly good showing with the work that would not admit of postponement. The strike itself drags on its weary and monotonous way. There looks as little prospect as ever of its ending in any agreement or compromise. And each side is as confident as ever of its ability to last out the other. Among its many ill effects, one certainly has been, and is, that some of the work got out by some printing houses has been less efficient than formerly. However, as such work emanates, usually, from firms which, or individuals who, are themselves employers, and as the great majority of Toronto employers are (as it seems is beyond question) opposed to a forty-four hour week, and consequently behind the employing printers in their stand against it, large allowances are made for what are regarded as unavoidable lapses from the standard of efficiency and punctuality usually demanded.

The informant previously quoted intimated that the reason—or one of the main reasons—for the present general dullness in the paper trade was not far to seek. "Take the case of Toronto," he said: "Quite a considerable number of industrial plants are closed altogether. More still are working three and four days a week. The same kind of conditions prevail, more or less, in the vast majority of the cities and towns in Ontario, and, indeed, throughout the Dominion. In commercial and financial establishments, too, such as make use of writing papers, ledgers and so forth, business is, speaking generally, sluggish in the extreme. Hence, consumers, as a body, are holding off from buying, not out of 'pure cussedness,' but because they are, most of them, themselves passing through a period of exceptional slackness. This state of affairs limits the demand for paper in the present, while the very general uncertainty as to what may be called a permanent revival of business, although there is a distinct feeling that some betterment of conditions is bound to come with the early fall, is impelling the consumer to restrict his buying to little beyond his present requirements."

PULPWOOD.—There is practically no change in the pulpwood situation. Most of the mills have large stocks on hand, while the market continues for the most part, to exhibit little activity.

PULP.—Up to the present, the trade in pulp has not shown many signs of increased briskness. But there is a feeling that the period of extreme depression has now passed, and that, from now on, business will gradually revive. It is regarded as a hopeful sign of the times that the Mattagami Pulp and Paper Company has resumed operations, on a considerable scale, at its plant at Smooth Rock Falls, Ont.

NEWSPRINT.—The trade in newsprint is, on the whole, and taking the various adverse circumstances into consideration, fair. Indeed, some of the mills report the business they are doing as "satisfactory". Those in control of newspapers, however, express a very confident view that prices will, before very long, undergo a further reduction.

GROUNDWOOD. — An increasing demand for groundwood is expected in view of the comparatively satisfactory trade in newsprint. When this demand occurs it is quite on the cards that the prices will rise.

WRAPPING PAPERS. — The general situation in wrapping papers continues rather dull, with an improvement expected very shortly. The kraft aspect of that situation is better than the others, and this may be partly due to the reductions in prices noted last week, although to what extent is not clear, seeing that other wrapping papers have also undergone a reduction in price. Orders for kraft for export are also on the increase.

TOILETS AND TISSUES.—The business in toilets and tissues continues fair and the demand for these lines is relatively steady.

NEW YORK MARKETS.

New York, July 23. — (Special Correspondence) — The paper market has been quiet this week. Trade has been principally of retail scope, buyers in common have confined their orders to small quantities of paper needed for immediate purposes, and the situation is showing clearly the effects of the usual mid-summer slowing up of business. Some members of the trade who evidently are paying more attention to the seasonal dullness than others have become a bit pessimistic over conditions, and openly assert that business is at present quieter than at anytime since the period of depression set in a little over a year ago. This may be true to an extent, but there are many who are optimistically looking forward to marked improvement in the fall and who express the opinion that the paper industry is today in a healthier state than it has been in many months. These latter point out that prices on most kinds of paper have been readjusted to where they compare very favorably with those existing prior to the war, that wages of paper mill workers have been reduced to levels more in keeping with prevailing circumstances, and that raw materials of practically every description are down in price where in most instances

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there is scant probability of any further recession taking place. This means that fundamental factors governing the industry are sound, and the only thing the market awaits to become livelier is the growth of demand from consuming quarters. Unfortunately, conditions in the consuming lines and the general financial situation still make for cautious buying, while the mid summer season also is keeping a good many users of paper out of the market as purchasers, but it stands to reason that this condition cannot last indefinitely, and a majority in the trade are of the belief that the market will commence to revive in activity early in the fall and gradually improve until before the end of the year the situation will have reverted to close to normal.

There has been a further slight decline in prices on wrapping paper. No. 1 domestic kraft is quoted down to 6 cents a pound, although most of the large producers are asking a half cent better than this figure. The drop in kraft wrappings doubtless is mainly due to the sharp recession in prices on raw material, kraft pulp having declined to a point where No. 1 pulp is reported available at 2.75 cents per pound and less. Jute manila wrapping papers hold steady at 8 to 8.50 cents on No. 1 and 6.50 to 7 cents on No. 2, and No. 1 fibre papers are unchanged at 6 to 6.50 cents.

No change of note is reported in the newsprint market. With the strike over and most mills again operating, there are larger supplies available, and offerings of side runs and sheet news have been heard of at concessions, but prices on news in standard rolls hold steady at around 4.75 cents a pound at mills, this being the price quoted generally to both contract and transient buyers. Consumption of print paper is at a low point at present—it invariably is at this season—but there has been no decrease out of the ordinary for the middle of the summer.

Book papers are in a quiet market position. Contract business comprises the bulk of present activity as publishers are seldom coming into the market for extra supplies excepting of very small volume. No alteration has occurred in quotations. Machine finished book is quoted by domestic mills at 6.50 to 7 cents per pound f.o.b. mill and super book at around 8 cents, while coated book is priced at an average of 10.50 cents.

Tissue continue fairly active. There is a ready demand for towels and napkins and toilet tissue, and fine grades of tissue are moving in relatively good amounts, with the quotation on No. 1 white maintained at between 90 cents and $1 per ream. Fine papers are quiet, jobbers showing little desire to stock. Obviously, the slowing up of general business has affected fine papers to a greater degree than some other grades, because there is less correspondence and therefore less bond and ledger paper consumed. As one paper dealer put it, "Ask the letter carrier; he will tell you how the mail has shrunk."

Boards are wanted chiefly in small lots and there is no especial activity in the trade and no feature other than that box manufacturers are looking ahead and are placing a fair volume of orders for delivery commencing about the middle of August. This promises better times for the board manufacturer and dealer. Prices at present are easy and plain chip board is freely available in the East at $28 per ton at the mill and news board at around $32.50.

GROUND WOOD. There is a firm tone to quotations on mechanical wood pulp and the tendency is decidedly upward. This is due not to any large demand at the moment but more to expectations of traders that a shortage of water in August and September will interfere with grinding operations and cause a material decrease in production. There have been sales of prime spruce ground wood in Upper New York State this week at $28 per ton at the pulp mill, and while some manufacturers are quoting f.o.b. prices slightly below this level, it is said that no ground wood is to be had at less than $36 a ton delivered at consuming points. Moreover offerings are far fewer in number and of lighter quantities than in some time, indicating that sellers are holding on to pulp.

CHEMICAL PULP.—The chemical pulp market is very easy. There is little or no demand of consequence, and prices are dropping with marked rapidity. Pressure from sellers in Scandinavian countries, coupled with the reluctance of paper mills to absorb pulp, is making for a weak condition, and so many and varied quotations are mentioned that it is questionable just how low prices have fallen. It is known, however, that domestic producers are offering bleached sulphite down to 4 cents a pound or $80 per ton, and it is reported that even some imported bleached sulphite of good quality is available at the same low figure. Offerings have been reported of prime unbleached sulphite of domestic origin down to $60 a ton, and news grade sulphite is reported selling at $55. Kraft has eased off further to 2.75 cents a pound at mills, with reports heard of sales in out of the way cases at even lower levels. In fact, it is known that a New York importer of Finnish kraft pulp is offering spot stock at $49 a ton ex the dock.

RAGS.—The papermaking rag market is almost entirely devoid of life. It cannot be said that dealers are falling over themselves in an effort to market stocks, but there are some who are accepting almost any prices offered to rid their warehouses of rags. Under such circumstances it is very difficult to learn what really constitute market values. There have been reports of

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Paraphenine Yellow G.
Diazamine Fast Yellow H.
Rosophenine 10B.
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sales of repacked thirds and blues of city origin to paper mills at 1.50 cents at shipping points, and definite offerings by dealers of No. 1 repacked old whites at 1.75 cents and of No. 2 repacked whites at 2.60 cents have been noted. Roofing is selling at 80 cents a hundred pounds at shipping points for No. 1 packing and 70 cents and less for No. 2 packing. New cuttings are nominal in price; there being so few sales that no established market basis exists.

PAPER STOCK.—Some grades of old paper are in moderate demand but the current movement of them is such as to have little sustaining influence on prices and the tendency of values is mostly downward. Aggregate business is indeed slight. Some consuming mills which for a time recently purchased fair-sized quantities of old paper presumably have switched their buying to wood pulp, and demand from even these sources has fallen off. Quotations in the New York market on the principal grades range about as follows, on a f.o.b. New York basis: No. 1 soft white shavings, 2.20 to 2.40 cents; No. 1 hard white shavings, 2.70 to 2.85 cent;s heavy book stock, 85 to 90 cents; ledger stock, 1.40 to 1.60 cents; No. 1 old kraft, 1.60 to 1.75 cents; white blank news, 1.45 to 1.60 cents; No. 1 mixed paper, 25 to 30 cents, and folded newspapers, 35 to 40 cents.

OLD ROPE AND BAGGING.—Old bagging is still dropping in price and there have been reports of offerings of No. 1 scrap bagging at 75 cents per hundred pounds and of No. 1 domestic gunny bagging at one cent a pound at shipping points. Mills display little buying interest, and very few sales are going through. Old rope continues in moderately good demand and is bringing around 4 cents a pound New York for manila rope in No. 1 condition.

A NEW BOOK ON BELT CONVEYORS.

A new book on Belt Conveyors has just been published by the Link-Belt Company of Chicago, Philadelphia and Indianapolis. It is book No. 215. It fully describes the Uniroll and Multiroll Idlers recommended by this Company.

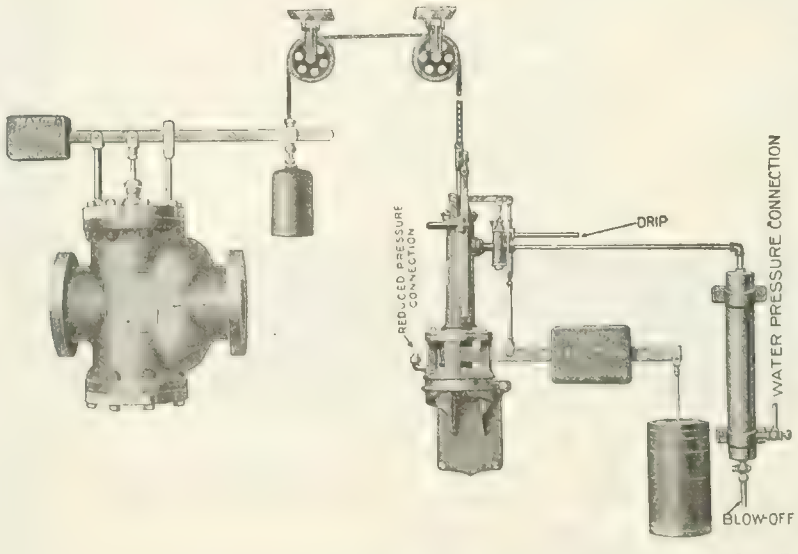
Among the interesting features of the book are:—

1. The correct methods of figurng Belt Conveyors and the details entering into them.
2. Price list which will enable the user to determine the cost of a complete conveyor or any portion of a conveyor.
3. Numerous examples suggesting the correct types of Belt Conveyors for the handling of Bituminous Coal, By-Product Coke, Sand and Gravel, Bagged Sugar or similar material, Crushed Rock, etc.
4. In addition there are many illustrations of typical installations.

This book should be a valuable addition to any library, and will be sent by the Link-Belt Company to anyone interested in this subject.

The Nashville Pulp and Paper Mills, headed by Robert J. Cullen, is to be started soon, according to the Nashville Banner. The initial operation will produce 75 tons per day of kraft pulp, employing the sulphate process. The mill property contracted for involves a large part of land and five of the enormous buildings formerly used in cotton purification and drying processes. There will be constructed, in addition, a large boiler plant, liquor recovery plant, causticizing units, wood preparation rooms and a number of storehouses. This will involve expenditures ranging around or perhaps beyond the impressive figure of $500,000.

SPECIALLY ADAPTED TO PAPER MILLS



Mason Combination Reducing Valves are designed to reduce and maintain an even pressure of steam, water or air, regardless of the variation of the initial pressure or of the volume of steam, water or air required. When the initial pressure is below that for which the reducing valve is adjusted, the reducing valve remains wide open and permits the use of whatever pressure there is available until the initial pressure rises above the pressure for which the reducing valve is adjusted, when the reducing valve partially closes and assumes the proper position to supply the volume required to maintain the reduced pressure, for which the relucing valve is adjusted.

An installation of this character has been found to possess several advantages over the self-contained style of reducing valve, as the valve in the steam line is a simple Balanced Valve of heavy design and not liable to derangement, and in case of necessity it can at any time be opened and the pressure maintained by hand.

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MONTREAL TORONTO

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., August 4th, 1921.** No. 31

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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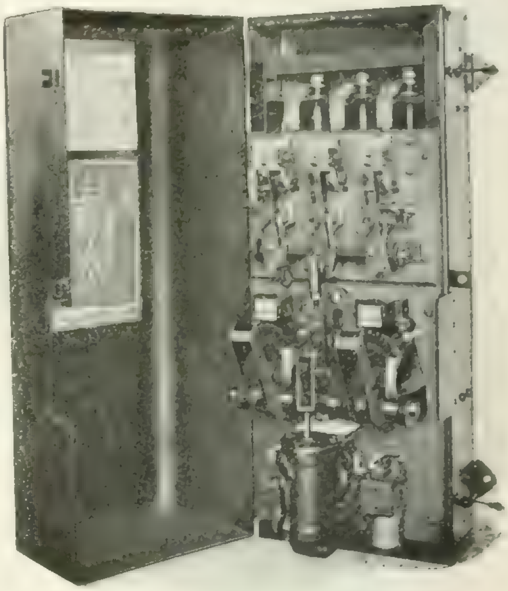
Automatic Starters for Squirrel Cage Motors



Allen-Bradley type KD Motor Starters are designed for automatically starting squirrel cage motors from a distance. The variable resistance of the Allen-Bradley graphite compression type enables motors to be started very gradually, so that these starters are particularly adapted for use with motors driving machinery with gears or other mechanisms which might be injured by the jar of sudden starting. The operation of the resistance mechanism may be adjusted so that the proper length of time is taken in starting the motor.

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EDITORIAL

DISARMAMENT.

No nation could have received with greater appreciation of its full meaning than Canada, the invitation of President Harding for the disarmament conference. Canada and the United States have lived in happy and peaceful accord for well over a century and this means that there has not been a hostile shot fired by one English speaking people upon another in more than hundred years. There is one side of this question which affects Canada in quite a different way from the mother country and from the other nations invited to the conference; that is, the relative benefit to the tax payer in those different lands. Canada has not been burdened with the support of a military or naval program at all proportionate to similar expenses in other countries. It is true that we have a very heavy burden as a result of the late war but a world movement for disarmament would not at all relieve our obligations with respect to past expenses and losses. The very considerable relief however, that disarmament would bring to tax payers in other countries really puts Canada at a considerable financial disadvantage relatively and the hearty support which all Canadians, great and small, have given to the movement can be taken as the willing sacrifice of Canadian tax payers to contribute this handicap as their share in the noble endeavor.

"To disarm" is occasionally given two meanings. One is to throw away or take away a weapon, and the other is the more figurative interpretation, when to disarm is to take away all fear and suspicion of aggression. Let us hope that this movement for physically disarming the world is based on the higher ideal of mutual disarming one another by impressing the feeling that there is no need for armament.

A COURTESY AND A SUGGESTION.

On Thursday of last week the Publisher of the Pulp and Paper Magazine with the Advertising Manager and Editor and the Superintendent of the Garden City Press, with a few friends, were accorded the privilege of visiting the Mille Roches plant of the Provincial Paper Mills. The Manager and Superintendent with others connected with the mill, extended the visitors every courtesy in showing them about the plant and explaining the process, and brought a very pleasant outing to a happy ending by organizing a trip by automobile, to the Long Sault Rapids. This trip was interesting for several reasons, most important of which is that the party could see one of the proposed locations for the great international power project which is being investigated by an International Commission. Just below where the party stood was the point where the Rapids King ran aground a few weeks ago. Finally the beautiful park, past which tumble the vast volumes of water which the St. Lawrence carries from the heart of the continent, is a park which has been presented to the town of Cornwall by Mr. Ault of the well known firm of ink makers, Ault and Wiborg.

The visit was very pleasant indeed, bringing as it did, an opportunity for a chat with old friends. In the course of conversation, a suggestion was made which it seems worth while to pass on to the paper industry.

The discrepancy in price between American papers in general, with the possible exception of newsprint and similar grades in Canada, was under discussion and the fact was brought out that an important reason for these differences is the number of changes which must be made by the paper maker to accommodate the occasional necessity of paper consumers in Canada. In other words the field does not offer the same opportunities for manufacturing in economic quantities the variety of grade, weight and color which is at present called for. The visitors in this case had an opportunity of seeing a machine shut down to make a change of grade, during which it was obvious that there was an absolute loss of production during this period while overhead and wages expenses continued. It was evident furthermore, that a considerable weight of paper run through the machine toward the end of the finished order was not acceptable and that a larger amount of the new order had to be discarded before running conditions were entirely correct and the color, weight and quality of the new order exactly matched the sample. Someone remarked that the paper torn from the reel was not wasted as it was returned to the beaters, but this person quickly recognized his mistake in assuming that there was no loss in this procedure when it was pointed out that all of the power, all of the chemicals, and all of the time required for preparing this stock a second time for the machine was a total loss.

These losses are incurred in greater or less extent every time where such a change is made on the machine, sometimes the loss is greater than others but there is always some loss. This loss becomes more prominent in proportion as the size of the order is less, that is, if a mill is required to lose production equivalent to 200 pounds of paper on a one ton order, the loss is 10 per cent, which must be added to the selling price, while if the order is for 5 tons the loss will be only 2 per cent. To interpret this in terms of the needs of Canadian publishers and printers, is to say that if 5 publishers, who had been using a slightly different character of paper and each required, say, a ton a month which necessitated in each case a loss of 10 per cent to the manufacturer, should compromise on a single standard it would mean that the mill could make a single order of 5 tons at a time and cut the operating change loss to 2 per cent. As a matter of fact, it would do better than this because the mill, knowing there were likely to be 5 similar orders the next month, could run at least a 50 per cent. over production on the initial order, which would provide a stock for immediate shipment to any one of the five customers at any time.

This is only one illustration of many possible circumstances and while figures have been arbitrarily assumed, the ratio would hold for other amounts. It could furthermore be at least imagined, that in arriving at a compromise standard of color, weight and quality, the customers might be willing to use a paper which was already being manufactured in much larger quantities for some other customer or which could be made more easily and cheaply than the paper first considered essential by the user. This, of course, would make the manufacturing cost still less and we should think the customer might properly expect an equivalent benefit.

Great advances have been made in the last few years in standardizing and it seems that a further step could be taken if the printers and publishers could be got together with a view to further standardizing the many odd ideas of paper requirements which the mills at present have to meet. It would seem to be an entirely appropriate matter for the Book and Writing Section of the Canadian Pulp and Paper Association to invite the co-operation of users of these papers and to make arrangements, if the idea should be acceptable to their customers, for a convention to go thoroughly into this question. It is sometimes given as a reason for the importation of foreign papers that the customer could get anything he wants in the way of oddities and in small lots from manufacturers across the line, perhaps realizing and perhaps not, that this small lot which seems a fair order to him may be but a small fraction of the order made by the mill, and from which the major part had already been disposed of as a regular product. On the other hand to make this small quantity as a single order could probably not be accomplished at double the figure by a mill that had to make it as a separate order. There will probably be always people who will want something sufficiently odd to be a little bit different from what the other fellow has but when the cost of the oddness is brought home, it may be found expedient for the owners of such ideas to blend them in order that Canadian industry may be conserved and supported to the extent of their business needs. If such a conference could be held within visiting distance of a paper mill, the consumer would have an object lesson that would be an eye-opener.

In any case, any success whatever that might attend an attempt to increase the quantity of paper made and used in Canada is not simply a help to the industry here but the benefits spread in all directions. To reduce manufacturing cost and selling price is to increase the probability of greater paper consumption in Canada.

COBWEBS.

The return of Premier Meighen is awaited with interest by paper men in order to discover the prospect of a favorable tariff arrangement with regard to import of Canadian paper to Australia.

Don't get the idea that there is no loss when a fire burns a lot of slash without getting into the standing timber. The probabilities are that Nature's efforts of several years to reforest the area have gone for naught, with the destination of young growth and even the seeds that may be in the top soil. *Every fire causes a loss.*

While Canada's trade balance with the United States is unfavorable in the ratio of $766,393,077 against $501,933,266 for the 12 months ending with June, our trade with the world showed exports worth $1,113,336,822 and imports of $1,085,311,676. The situation is materially better than last year, both for the year and for the months of June, in respect to trade balance.

Every Canadian manufacturer should be a regular reader of the Weekly Bulletin of the Department of Trade and Commerce, Ottawa.

The record of ballots cast by the various locals of the International Brotherhood of Paper makers on thirty-one propositions submitted to a referendum vote shows clearly that each member can, and apparently does, register his own convictions. The totals in no case showed an unanimous vote and one proposition passed by a majority of only 162. It is noted that several local majorities were opposed to the general majority. The results, however, show that members of this union are independent thinkers.

SERIOUS FIRE IN CAPE BRETON.

A telegram from Nova Scotia tells of a serious fire that has swept the forest near Neils Harbor, Cape Breton, burning an area 40 miles long by 5 miles wide, and destroying several hundred thousand cords of pulpwood. The fire seems to be under control, owing to rain on Sunday morning, but it is liable to break out again on account of the high wind prevailing. The blame for starting the fire is laid on mining prospectors.

A crazy rumor has been printed in the United States that a contract has been made for the shipment of 600,000 cords of pulpwood to Holland. There is no pulp mill in Holland, and pulpwood from the Baltic or Germany would be cheaper than Canadian wood, even if such were to be had.

Electric Steam Boilers in Pulp Mills

Although electric boilers have been in use for several years, they have only recently been seriously considered. But with the enormously increasing prices of fuel, the possibility of using electricity on a much greater scale has received a good deal of attention. Technically, the problem of producing steam by electricity presents few difficulties.

Electric boilers have very great advantages over the ordinary fired boilers; they occupy little space, are easily mounted in the mills and, above all, they are independent of chimneys and smokestacks. The care of the electric boiler is quite simple, as they generally require nothing but an attendant to manipulate the switches and regulate the feeding. In most cases, the construction of the boiler is such that the efficiency of the attendant is of little importance, because the steam is made automatically and with absolute uniformity. Boiling dry and subsequent inconvenience, danger of explosion, etc., are eliminated. In electric boilers incrustation does not occur, since all the waste matters or sludge drop to the bottom, whence they can be easily removed by the blow-down process.

The problem is chiefly an economic question. To ilustrate this part of the subject, the following figures are given: 1 kilogram of coal (2.2 lb.) of average quality will produce about 6,500 calories. If we figure on a boiler efficiency of 70 per cent., 4,500 calories will consequently be obtained in the steam. If we do not include the loss in conversion, 1 kilowatt corresponds to 856 calories. If the efficiency of the electric boiler is 96 per cent., there will consequently be utilized about 822 calories. Comparing these figures we find that 1 kilowatt corresponds to about 0.4 lb. of coal (anthracite). On this basis it may be calculated in what instances it will be profitable to produce steam by electricity.

If an industry has to purchase the electric power, the price, of course, may vary for different reasons. One way is to pay a fixed price per kilowatt. In such a case the prices of coal and power compare as follows:

	Per ton of coal corresponds to about
30 kr. (Approx. $ 7.00)	0.54 ore ($.0012) per kw.
50 kr. (Approx. 11.50)	0.88 ore (.002) per kw.
100 kr. (Approx. 23.00)	1.77 ore (.004) per kw.
150 kr. (Approx. 34.90)	2.66 ore (.006) per kw.

If, however, the electric power costs a certain sum per kilowatt year, another result will be reached which, of course, will depend upon the number of working hours per annum. It is clear that with longer working hours it is more economical to use electricity. To illustrate this the following figures are given:

A. 7,200 working hours:

	Per ton of coal corresponds to
30 kr. (Approx. $ 7.00)	38 kr. ($ 8.75) per kw. yr
50 kr. (Approx. 11.50)	65 kr (15.00) per kw, yr.
100 kr. (Approx. 23.00)	129 kr. (31.00) per kw. yr.

B. 3,600 working hours:

	Per ton of coal corresponds to
30 kr. (Approx. $ 7.00)	18 kr. ($ 4.15) per kw. yr
50 kr. (Approx. 11.50)	32 kr. (8.00) per kw. yr
100 kr. (Approx. 23.00)	65 kr. (15.00) per kw. yr.

The foregoing calculation postulates that first-rate power is used. When the power is of this nature the economical factor will largely depend upon the price of coal, and there is consequently a certain force in the argument that the use of electric boilers will be somewhat restricted in the case the price of coal returns to normal. There is, however, another field of activity for electric boilers in which they are practically in no wise dependent upon the coal market.

This boiler utilizes in the production of steam all the surplus power that is now wasted. Such surplus power will be found in all industrial works with an individual power plant, the energy of which is not continuously consumed; or at industrial works paying for electric energy on the basis of maximum consumption, regardless or whether the power is used for a longer or shorter time. Further, some of the larger power plants have considerable surplus power at certain periods of the year when the supply of water is plentiful, and during certain hours of the day—a surplus of which it is hard to dispose with an advantageous result. Much attention is paid to this disposal in Sweden, where all power plants owned by the Government endeavor to employ this surplus energy for the production of steam.

The cost is modified by the scheme which provides for the payment of the cost on a sliding scale, so that the price of the power always keeps relatively below the market price of coal. So much may be said of the economic aspects of the production of steam by electricity.

To form a judgment as to the size of the boiler plant needed, the estimate may be made on the basis of the steam required, or on the basis of coal consumption. Based on the steam requirement, the calculation must determine the quantity of steam that can be developed at different temperatures of the supply water. To illustrate, the following figures are given: With a steam pressure of 12 kilogams to the square centimeter and a feed-water of O°C, there will be developed about 1.23 (2.7 lbs.) kilograms per kilowatt hour, and—

	There will be developed about
at 30° C. feed Water Temp.	1.28 kilograms (2.8 lbs.)
at 60° C. feed Water Temp	1.35 kilograms (3.0 lbs.)
at 80° C. feed Water Temp	1.40 kilograms (3.1 lbs.)

On the other hand, if the calculation is based on coal consumption, one ton of coal, as we know, corresponds to about one H.P. year. For example: A pulp mill needs for producing steam, 800 kilograms (1,760 lbs.) of coal per ton of pulp. If the output of the mill is 10,000 tons of pulp a year, this quantity will correspond to a consumption of 8,000 tons of coal, or in other words, 8,000 H.P. year, which is roughly equivalent to 6,000 kilowatts

Electric steam boilers are generally of two types; boilers with resistance cells and boilers with electrodes. In the case of the former, the electric energy is converted into heat in the cells, whence it is conducted to the water. The cells are either open with the conducting parts in direct contact with the water, or enclosed

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Lecture by Captain Olsson before the Technical Association of Paper Manufacturers (Sweden,) November 24, 1920. Translated by Dr. Paul Bartholow, from Papir-Journalen, December 4, 1920, for the News Print Service Bureau.

in tubes or other suitable material. An alternating current should always be used with open cells or elements, for otherwise the water would be decomposed; in the case of closed cells, both an alternating and a direct current can be used. The electric boilers provided with resistance elements can only be used for a voltage up to 800.

Boilers with electrodes can be used both for low and high tension, but only with an alternating current. The electrodes conduct the current into the water, which itself forms the resistance cells, converting electric energy into heat. The electrodes are either insulated or non-insulated; in the former case, the object is to lengthen the path of the current through the water. In low tension boilers the electrodes are non-insulated: in the high tension devices they are usually enclosed in a casing. In the mills, most of the boilers are of high tension, since the current employed is generally high tensioned. By carrying the current directly into the boilers, all special transformers are avoided, these devices being always rather costly.

The Apparat-Aktiebolaget, of Stockholm, manufactures electric boilers of low and high tension types up to 20,000 volts. They are built in various sizes up to 8,000 kilowatts, and are of upright or horizontal plan. Some of the results obtained with these boilers are shown in the table. They have been installed during the past year, have no loose parts, and are consequently most accurate in operation. The dryness of steam, as we know, depends largely upon the efficiency of the boiler; in the case of these boilers the efficiency is equal to that of the ordinary coal-fired boilers. The dryness of the steam is sufficiently high to enable it to be used for engine power.

The electrodes are generally inserted in the lid of the boilers, and are arranged in groups of three and three, each phase being opposite to the three-phased alternating current. The number, of course, varies with the size of the boiler. A screen is provided inside the boiler to ensure a better circulation. Owing to this arrangement, the circulation is very even, which is important, because the resistance of the water is thereby maintained at a uniform level. Waste of the current is thus avoided.

The conductor, passing through the water, ends in an iron shoe, which is in direct contact with the fluid. The iron shoe, or as it is generally called, the electrode, is enclosed in a porcelain tube, the size of which depends partly on the voltage to be used, and partly on the resistance of the feed-water. This feed-water varies considerably when taken from small lakes and rivers. It has been shown at some of the electric boiler plants built by the Apparat Aktiebolaget, that the resistance of the water varied between 4,000 and 42,000 Ohms per cubic meter. These extremes, however, are very unusual. The resistance generally is about 25,000 Ohms per cubic meter.

The way in which the production of steam is regulated is of great importance. It is effected by means of a combination of different systems. The coarser mechanism consists in switching on or off a larger or smaller group of electrodes. If no exterior cause prevents, the current may be regulated by connecting and disconnecting a certain number of individual electrodes within a number of groups. In all cases the most accurate or delicate regulation is effected by changing the resistance of the water. When the boiler has been in use, there is always present what we may call spent water, which as a conductor, is much superior to fresh water. By means of a mixture of fresh water—a poor conductor—and spent water with its greater conductivity, the resistance of the water can be regulated within fairly wide limits. The production of steam is regulated in the same way. The quantity of water to be added or removed for this purpose is small and of no influence on the efficiency of the boilers. Moreover, the boiler is adjusted to carry a certain charge—a matter of no difficulty—and it is only necessary once a day to equalize the mixture in order to maintain a constant charge. It must also be recalled that the resistance largely depends upon the temperature of the water, being lessened as the temperature rises.

The actual working of the electric steam boiler in the pulp and paper mills of the Wargon Company may be thus described. In this connection, an important factor is that the company has a central electric plant. The installation consists of seven electric boilers each 2,000 kilowatts, with a voltage of 10,000 and pressure of 12 kilograms per square meter.

The results have been eminently satisfactory in these mills. The company has drawn attention to the facts in a report which contains the following: "Practically all the steam necessary for both sulphite and sulphate mills is produced by electric boilers. To attend them only one man is required per shift. Compared with our coal-fired boilers, we save a force of about seventeen firemen, sixty-five tons of coal per day, and all the labor, tonnage, and rolling equipment which was required for transporting, transhipping, discharging and conveying coal and ashes. The boilers work efficiently with nearly 10 per cent. profit. They produce about 1.25 kilograms of steam at 10 kilograms pressure per kilowatt hour. To get up steam after a standstill only requires from 10-20 minutes. The operation is simple, convenient and clean."

WAYAGAMACK WON FOOTBALL CUP.

Wayagamack defeated Shawinigan in Cup Final of the St. Maurice Valley Association Football League held in Three Rivers on July 19, 1921.

A large crowd being in attendance who were very enthusiastic, and had a good afternoon's sport. Wayagamack running out winners by 5-0, although Shawinigan deserved a goal or two on the day's play. Hamilton, Smith, Stewart and Cameron starred for Wayagamack while Munro, Pink and Murray were the best on the Shawinigan side.

The teams were as follows: –

WAYAGAMACK—Goal, Gamble, right back, Vining left back, Hamilton, right half, Laird, centre half, Smith, left half, Stewart, (Capt.) outside right, Ormrod, inside right, Kershaw, centre, Ewen, inside left, Hunter, outside left, Cameror.

SHAWINIGAN—Goal, Pink, right back, Lang, left back Geddies right half, Munro, centre half, Murray, left half, Verdon, outside right, McLaughlin, inside right, Barr, centre forward, Robertson, inside left, Millar, outside left, DeKindren.

A word of praise is due to Capt. Clarke of Grand Mere, who refereed the game very efficiently, and kept the players well in hand, he had no easy task, as a Cup Tie Final is always productive of extra excitement, and keenness.

It is better to have done one's best and lost than to have done one's worst and won. Shirk and you

Getting Back to Normal*

By J. B. LAWRASON, Toronto.

If I could successfully solve for each and everyone here this afternoon, this problem, many of our troubles would be over, but like everything else, one can but take from his own experience, along with the knowledge we have of things in general, and from these, to make a few suggestions that may be helpful in untangling the problems of getting back to normal.

It may be well for us to look back over the past few years, and refresh our minds as to what has brought us to the present conditions. Back in the years before the war, the materials that the average Box Manufacturer used, were some of the most stable in price of any on the market; from year to year, the price varied but little. It has been said that paper and paper products had but one price.

Then we came to the early days of the war, face to face with the uncertainty of the future, prices were shot to pieces. I believe that this is true in the memory of everyone present, that they never saw the value of materials go so low. Then came the activity of the war period, with the depletion of the world's market of manufactured and raw materials. Along with the inflation of credit came the increased value of all kinds of goods and materials. With this condition, it took very little to create what we have gone through, and was known as a war business boom. We do not want to forget that along with this business boom, we find a tremendous increase in the world's productive power.

These conditions continued till the middle of 1920, when we came to, and began to realize the fact that the world was again entering into a period of re-adjustment and lowering prices. It is the meeting of these conditions that you and I are interested in to-day. I would like to say that the conditions that we have here in Canada are not local but international, we find that all countries are going through the same thing. I would also like to say that we have watched with a good deal of interest the re-adjustment that our friends to the South have been going through. The position in Canada is far different than it was back in 1914. At that time, we entered the war, as it were, in swaddling clothes, and we came out a Nation, with new ideals and new ambitions in world affairs. I am of the opinion, as business of the future unfolds itself internationally, that Canada is going to be more of an important factor. With the tremendous natural resources that we have, along with a people who are ambitious and willing to work, we can not help but be heard from.

We appreciate the friendliness of our American friends, and I believe that if the English speaking peoples, with their common language, their common ideals, and their common traditions are willing to pull together, it would have a greater influence in bringing the world back to normal conditions than any other single combination that could be suggested or thought of. Two things are absolutely essential in working out the problems that we have on hand, not only among the members of this Association, but nationally and internationally, and that is faith and confidence in each other.

Easy business is over, during the last few years, a good deal of money has been made not alone by our ability as manufacturers, but by the opportunity the increased value of goods has given us to make money by merchandising; we were continually selling in a sellers market. Those conditions are now reversed, and we will need to look well to the new conditions, for largely the money that we will now make, it will be made as manufacturers, and the money we lose, will be lost in merchandising.

We are also going to find that, by the tremendous expansion that has taken place during the last few yeras, we are going to have a heavy charge upon our hands in idle plant. I am of the opinion that the expansion of the Paper Box business has been such, that it will take five or ten years of normal growth before the entire capacity of the plants of Canada can be used to their limit. With these facts before us, never as manufacturers did we need to be more careful, and use the factors that we have for making profit, than we do now. If we lose as manufacturers, and also lose in the merchandise that we are handling, the outlook and result is bound to be serious; it means depleted resources, and in many cases, depleted resources that it will take years to re gain, and for this reason, I believe that it is no time for cutting or slashing of prices as some think it is.

The successful business is the business that makes a profit whether that business is large or small. Is it not true, that the corner store that is doing business and making a profit, is a far greater success than the great departmental store that is losing money? I am not arguing for small business, nor am I arguing for big business, but the point that I wish to make and emphasize is this, that the essential thing in doing business is the profit we make in doing that business, and to draw upon the resources that we have made in the past, for the present conditions, is false economy.

New Business.

The problem that we have before us this afternoon, is also a very practical one, getting back to normal will mean that we will have to use our creative ability in a wider sense than we have ever used it before, it will be our business to try and make two blades of grass grow where one grew before. It will be our business to try and create packages in such a way that they will have a real selling power for the manufacturer, and a tremendous appealing power to the buying public, to place the goods of the manufacturer in such an attractive way, that we are going to develop a lot of new business that otherwise would lie dormant, our whole energies will have to be bent in this way, to my mind, it will be far better business to try and develop and create than to compete.

Costs.

We will also need to watch costs, we are not going to have the wide spread of margin that we have had during the last few years. Economy in manufacturing and in overhead expenses will have to be given consideration. Cost systems and their careful following up, will need to be given more attention than they have in the past so that we will know exactly what we are

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*Address delivered at the Annual Meeting of the Canadian Paper Box Makers' Association, Hamilton, Ont., June 24, 1921 [illegible] We will have to put into operation our plans and schemes of taking care of those things that probably during the last few years have been lying idle through the easy business conditions which we were going through.

Selling.

I remember of being at a meeting of a number of manufacturers a year or a year and a half ago, when one of those present said that they did not need any longer to have salesmen, that their goods were selling themselves. Here again, is another department of our business that will need our careful attention; selling the products of our factories, to develop the idea that the successful salesman is a man who can go out and sell goods at a price that will yield a profit. If there is going to be any profit made in the goods we are selling, the salesman and selling department are going to be something more than mere order taking propositions. A good deal can be done in training and developing our selling forces, that will have a lot to do in getting, and stabilizing prices.

Service.

How little we have heard of service during the last few years. Well do I remember when this was one of the essentials of the success of any business, but we have almost forgotten that this was necessary during the last while back, but again we are at the time when service will play a very important part in the success of our business, and service of quality will be just as important as service of delivery.

Labor.

How easy it is now, for capital to be unjust to the workers, but I am of the opinion that now is a golden opportunity for employers as a whole, to show justice and fair dealing to those who make it possible for industry to be carried on, for they have their problems of getting back to normal conditions, that will need our greatest consideration and practical sympathy.

Cutting of Prices.

We have heard so much these days about cutting of prices. The very fact that we are out cutting prices shows how quickly we are overcome by the general conditions that prevail. I do not believe that anybody gains by cutting prices, it is one thing sure, that the seller does not, and I have yet failed to meet the customer who will thank one for cutting prices, because I believe that there always lurks in the back of the buyer's mind that the seller who will cut his legitimate profit on a job is nothing but a fool. These may be strong words, and we may not like to apply them to ourselves, but when we face the fact, and size up the harm it does, not only for the present, but for future business, can we say anything less, when we allow ourselves to develop these conditions.

This is a time, when if we want to get back to normal, we will need to take a broad view of business, and not only on what we are going through to-day, but also to look well ahead to the future, for what we sow to-day, we will reap to-morrow. I am of the opinion that if we have, as I said at the very beginning, Faith and Confidence in our own business, and each in the other, that we will be surprised how quickly we will get back to normal business. If we put into effect the reasonable and common-sense way of handling the conditions that we are going through at the present time, we will find that, when the sum total is made up, we have not done so badly, that we have made a profit, and have conserved those conditions that we have been developing and building up during the past few years, not only for our own benefit, but the benefit of the Association, and the industry as a whole.

TEXTBOOKS ON PAPER MANUFACTURE.

Subscriptions are being taken for the new textbooks on the manufacture of pulp and paper prepared under the direction of the Joint Committee on Vocational Education of the Pulp and Paper Industry, a complete set of which should be owned by every firm or individual connected with the industry.

The set will be complete in five volumes. Volumes I and II, deal with arithmetical operations, elementary mathematics, drawings, etc. Volumes III, IV and V, to be issued later, will deal with pulpwoods and their preparation; manufacture of pulp; analytical methods; and paper manufacture in all its aspects.

Volumes I and II are now on sale at $5.00 a volume. In the selection of class-room problems bearing on the principles and practice of pulp and paper manufacture they represent the highest standard in textbook publishing.

These books are distributed in Canada for the Pulp and Paper Association by the Pulp and Paper Magaine. Orders are received only for full sets and must be accompanied by remittance of $10 (Canadian) for the first two volumes; other volumes to be paid for as issued.

Readers in the United States should send orders, with remittances, to Thomas J. Keenan, secretary of T.A.P.P.I., 542 Fifth Avenue, New York.

NORWEGIAN PAPER.

Paper is, next to cellulose, Norway's most important article of export. The first paper machine came to Norway in the year 1838, but it is only during the present century that this branch of industry has reached the advanced position which it now holds in Norwegian industries. From 1903 to 1913 the production has more than trebled. During the last-named year 85 paper machines were in activity distributed over 44 mills. The whole production of paper in Norway in the year 1913 was about 210,000 tons, of which about 180,000 tons were exported. The Norwegian export of paper to the United States was over 4,000 tons in the same year, but this decreased later on account of the war, so that in the year 1917 it was only 1,465 tons.

The Trade and Commerce Weekly Bulletin for July 25 contains a detailed review of conditions in the Republic of Columbia, with directions as to tariff, documents, etc.

The Paper Makers' Building Association has been incorporated in New York State for the purpose of holding, for the benefit of the International Association, the head office building at 25 South Hawk St., Albany. The members are J. T. Carey, Pres. and Treas.; W. B. Clements, Sec.; and G. J. Schneider, M. H. Parker, James Lockword, and D. McDermott.

Canada, with exports of $506,104,304 in eleven months, leads the countries from which the United States imported goods, and was the second best customer of Uncle Sam, with imports of $739,833,270. In this period the trade balance, though still greatly adverse, was improved by $64,192,030.

Pulp and Paper Exports for June

Total exports of pulp, paper, and pulpwood for the month of June 1921 show a considerable shrinkage from the figures for June 1920, which, however, is comparing what is likely to be the dullest month of a depressed period with what was pretty nearly the record month of a period of unusual commercial activity. We find shipments of book paper and newsprint to total about the same as for the month of May but with other papers showing a value on June exports only about half of those for the previous month. (In making the comparison between this report and the report for May which was published in the Pulp and Paper Magazine for June 14th we find an error in the total of paper only for the month of May 1921. The amount should be $5,263,247.) While this showing of paper exports gives a decrease for the month of June over the same period last year of a little more than $3,000,000 we find that the exports for the three months ending with June are only $4,000,000 less than the same period during 1920 and are nearly $3,000,000 **more** than for the same period in 1919. It must be remembered, however, that capacity has increased in the meantime so that even the greater export does not necessarily mean the same ratio of possible production. It must, too, be borne in mind, that values have been dropping so that $1,000 now means a greater production than was the case this time last year.

When we come to examine the figures on pulp, we find a considerable decrease in every item and this applies to both quantity and value. Total exports for woodpulp for the month of June were just about 1/3 of the very gratifying quantities last June, while the values are slightly less than 1/3 of what they were for that month. Comparing the three months period, we find a little more encouragement too, in the case of

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD.

		Month of June		Three months ended June		
		1920	1921	1919	1920	1921
Paper and manufactures of						
Book paper	Cwt.	7,834	1,743	6,468	14,953	9,421
	$	85,090	20,546	70,145	149,290	123,251
Newsprint paper	Cwt.	1,445,917	847,604	3,122,754	3,686,749	2,680,430
	$	6,426,259	4,295,181	10,971,624	16,189,356	14,219,467
Other paper and manufactures of	$	1,366,391	247,781	1,851,415	3,207,794	1,215,691
Total paper	$	7,877,740	4,563,508	12,893,184	19,546,440	15,558,409
Wood Pulp—						
Sulphate (Kraft)	Cwt.	230,907	146,824	463,014	626,397	402,977
	$	1,200,406	541,488	1,492,935	2,821,996	1,630,003
Sulphite, bleached	Cwt.	163,668	118,721	237,233	454,885	247,801
	$	1,180,028	602,200	1,146,122	2,889,240	1,365,187
Sulphite, unbleached	Cwt.	678,836	187,250	665,924	1,558,920	473,392
	$	3,873,975	711,664	2,610,236	7,798,778	1,855,307
Mechanically prepared	Cwt.	892,309	196,090	1,000,222	1,370,412	586,459
	$	2,136,767	370,072	1,194,597	3,422,846	1,255,787
Total Wood Pulp	Cwt.	1,965,720	648,885	2,366,393	4,010,614	1,710,629
	$	8,391,176	2,225,424	6,443,890	16,932,860	6,106,284
Pulp Wood	Cord.	107,029	75,635	206,317	224,110	203,566
	$	1,252,994	1,013,933	2,025,714	2,515,470	2,709,288
Country of Destination.						
Paper and manufactures of—						
To United Kingdom	$	470,940	66,735	793,101	1,122,153	[illegible]
United States	$	6,062,104	4,138,756	10,203,456	15,463,388	13,605,102
Other Countries	$	1,344,696	358,017	1,896,627	2,960,899	[illegible]
Wood Pulp						
To United Kingdom	$	1,298,678	178,155	664,780	2,009,902	[illegible]
United States	$	6,614,130	1,802,563	4,644,736	13,737,988	4,630,825
Other Countries	$	478,368	244,706	1,134,374	1,184,970	[illegible]
Pulp Wood—						
To United Kingdom	$	....	......	......	......	......
United States	$	1,252,994	1,013,933	2,025,714	2,515,470	2,709,288
Other Countries	$	....	....	......	......	
Total Paper, Wood Pulp and Pulp Wood-						
To United Kingdom	$	1,769,618	244,890	1,457,881	3,132,055	[illegible]
United States	$	13,929,228	6,955,252	16,873,906	31,716,846	20,945,215
Other Countries	$	1,823,064	602,723	3,031,001	4,145,869	[illegible]
Totals	$	17,521,910	7,802,865	21,362,788	38,994,770	24,373,981

pulp; though the 1921 figures are even slightly less than 1919 figures for the same period and the quantity also is slightly less. The figures for pulpwood, while showing a decrease for the month of June, show a progressive increase in value with very little change in quantity for the three month period of 1919, 1920 and 1921.

The depressed conditions in the United Kingdom are reflected distinctly in the marked decrease of exports to the mother country. In fact, exports have fallen off to only about 1/7 of the values for June 1920 while total exports (including pulpwood) to the United States fell off only to ½ and to other countries decreased to 1/3. Again referring to the three month period we find England's purchases down to about 1/3 of those for the period for 1920 but to only slightly less than the period for 1919. Purchases by the United States were 2/3 of the values for the last year and 25 per cent. greater than for the corresponding period in 1919. Other countries bought more than half of what they did in the same three months in 1920 and more than 70 per cent of their purchases in 1919 for the same period.

Summing up the totals we find shipments for the month of June to total $7,802,865 as compared with $17,521,910 for June 1920, or a decrease of something over 50 per cent. Referring to the three months period we find the totals running almost exactly in proportion to United States consumption.

In studying the figures given in the accompanying table, the reader should bear in mind that a considerable number of paper mills were closed during the months of May and June while May shipments could be made from April production. It is therefore, to be remembered that this period is the climax in industrial and labor conditions in England and the period which close observers believe has recorded the bottom of industrial depression in the United States. The sales of pulp show distinctly the state of general business across the line and while the month of June shows a rather poor trade compared with the same month a year ago. the three months period shows a pretty fair total of business. It is probable that the months of July and August will not show very much improvement over the report for June but the general standardizing of business conditions and return of confidence among manufacturers and buyers generally will be reflected before long in the monthly exports of Canadian pulp and paper.

NEWSPRINT IN THE UNITED STATES.

In connection with the above, the following extract from the last report of the Federal Trade Commission with the regard to newsprint will be of interest.

The average production of total newsprint and standard news, based upon the total combined production for the years 1918, 1919, and 1920, amounted to 117,442 tons of total newsprint and 105,716 tons of standard news, for a period corresponding to June. The actual production amounted to 86,770 tons of total newsprint and 79,769 tons of standard news, which for total newsprint was 26 per cent below the average for the three-year period and for standard news about 25 per cent below the average.

The production of newsprint for June, 1921, compared with June 1920, shows a decrease, amounting to 33 per cent for total newsprint and about 33 per cent for standard news.

The production for June 1921, compared with June 1919, shows a decrease of 24 per cent for total newsprint and 18 per cent for standard news.

The decrease of production for June, 1921, over June, 1918, amounted to 19 per cent for total newsprint and 18 per cent for standard news.

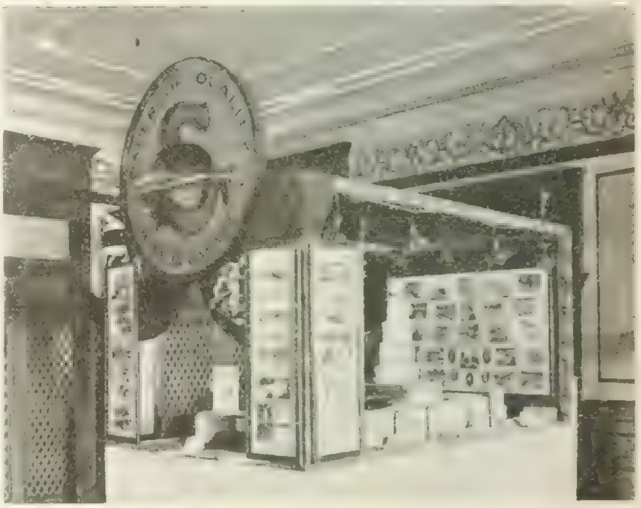
Mill stocks of both total newsprint and standard news decreased during June, 1921.

Averages Prices Paid by Publishers.

The weighted average price of contract deliveries from domestic mills to publishers during June, 1921, f.o.b. mill, in carloads lots, for standard news in rolls was about $5.227 per 100 pounds. This weighted average is based upon June deliveries of about 33,000 tons on contract involving a total of approximately 570,000 tons of undelivered paper manufactured in the United States.

The weighted average contract prices based on deliveries from Canadian mills of about 16,000 tons of standard roll news in carload lots, f.o.b. mill, in June, 1921, was $5.322 per 100 pounds. This weighted average is based upon the June deliveries on contracts involving about 255,000 tons of undelivered Canadian paper.

The weighted average market price for June of standard roll news in carload lots, f.o.b. mill, based upon domestic purchases totaling about 7,000 tons was $5.129 per 100 pounds.



Fine Exhibit of Canadian Paper.

This picture shows the exhibition at the Jubilee Convention of the Canadian Manufacturers' Association in Quebec which was arranged by the Howard Smith Paper Mills. It attracted a great deal of attention and Mr. Rodier and Mr. McLean were kept busy answering questions on the manufacture and uses of paper. Samples were shown of the raw material and the partially manufactured paper at various stages in the process. Samples of the finished product were shown to demonstrate the various uses of the different kinds and grades of the finished paper. It is anticipated that the example of the Howard Smith Paper Mills will be followed at future conventions of the C.M.A. and on similar occasions by other paper manufacturers who are beginning to realize the importance of showing the public the excellent material and service which the Pulp and Paper Industry of Canada is prepared to supply and render.

Forestry in Norway

By EDWARD BECK, Publicity Department, Canadian Pulp & Paper Association.

Norway has been in the business of forest cultivation for more than sixty years. In 1907 the golden anniversary of the beginning of Norway's present efficient forestry system was officially celebrated. A volume containing a history of the development and progress of the forests was published. The lapse of sixty years, however, has, according to the leading Norwegian forest authorities merely enabled them to make a fair start. Norwegian forests, they say, are still in their infancy; cultivation ought to have begun a century before it did. They are hoping to make up for lost time.

There are in Norway, as in Sweden and Finland, both State and private forests. The latter largely predominate. Altogether, the forest lands comprise about 28,000 square miles, or about 23 per cent of the country's total area which consists of about 124,450 square miles. Compared with Canada's forest area that of Norway appears almost insignificant, yet Norway regards her forest possessions as of the utmost importance and spares neither money nor effort to keep them in a state of constant production. Her national vitality depends upon them.

Norway's natural resources are strictly limited in extent. The supply of timber ranks among the first and most important. It furnishes the main source of Norway's export trade and provides fuel, building material, and other wood necessities for home consumption. One-sixth of Norway's laborers find their employment in the wood-refining industries; one-tenth in the paper industry. Norwegian railways derive more than 12 per cent of their total traffic revenues from the pulpwood, cellulose and paper industries; some of the railways depend almost exclusively upon the revenues so derived. Appreciation of these facts has not only led Norway to the adoption of a policy of strict conservation of her remaining forests, but also to employ all available means for the building up of a forest supply for the future. Today the country is not forest self-sustaining and is obliged to import considerable quantities of wood from Finland. Formerly wood was also freely imported from Russia.

The productive timber lands of Norway consist of about 21,825 square miles, of which 11,500 are held by peasants and other small owners, 5,575 by incorporated companies, and 4,750 by the State, the latter including communal lands, parish and other endowments. The tendency at present is to discourage the further acquisition of forest lands by private owners. Incorporated companies are, in fact, debarred by law and from increasing their holdings by purchasing lands from peasants and other individual holders. Wherever possible and practicable the State is resuming ownership of these lands and using them to build up new forests.

Private ownership in the past, before the State established control of the forests, was charged with wasteful methods and irresponsible care, resulting in depleted and sterile forest lands. These practices are what led to the present national forest policy. The private owners of today, however, need no restrictive laws to compel them to do their duty by their forests. They have long since learned their lesson. The forests lands owned by the incorporated companies in Norway are the best kept of any, as well as the most prolific in their annual yield. The companies spend much more proportionately than does the State on their upkeep.

However, Norwegian forest laws do not leave it entirely to the owner to say what shall be done. The owner cannot do as he pleases with his woods. All cutting is done under government prescribed regulations. So-called clean-cutting, which is permitted in Sweden and Finland under certain conditions, is practically prohibited in Norway. Selective cutting is the only approved method. All cutting is done with regard to its effect upon the standing forest rather than for the immediate yield. Norwegian foresters are unusually successful in maintaining their forests by natural means. Seeding and planting are seldom resorted to, cutting being done in such a way that Nature replants the cut-over area in a remarkably short time, maintaining the forests in a state of constant development.

The State and the private owners work well together and the results obtained are the best. Violations of the regulations are very rare. The State is also generous in its support of the forest industry generally and does everything possible to encourage its development.

Coniferous timber areas are estimated to represent about 82 per cent of Norway's total productive forests, Scotch pine and white spruce constituting the principal species. The State Forest Department, which administers the public forests and supervises the administration of those privately owned, is now engaged in completing a survey of the country's total timber resources which, when completed, is expected to lead to further restrictions. An unofficial estimate, covering thirteen million acres of productive forest lands, gives an average of 9.2 cords per acre, or approximately, 3,675,000 cords. The total annual consumption, exclusive of imports, has been calculated at about 1,320,000 cords for the wood-using industries and at about 4,765,000 cords of the wood used for fuel, for construction and other domestic purposes is taken into account. According to this calculation Norway is consuming annually from 25 to 30 per cent more wood than its forests are yielding. This is generally admitted by Norwegian foresters. They say, however, that the discrepancy will be overtaken by the development of new forest areas now under way. For the present, expansion of the saw-mill industry has stopped. A decline in other classes of wood products during the next few years is generally anticipated.

As already indicated, more than half of the productive forest lands of Norway is represented by small holdings, principally peasant properties. The small proportion owned by the industrial companies represents land acquired many years ago. Most of the pulp and paper companies of Norway have to depend upon purchased timber for their raw material, a development which, according to some of the companies, places them at a distinct disadvantage in comparison with similar companies in Canada and other pulp and paper producing countries, and renders their profitable operation somewhat difficult.

Competition between Norwegian wood-buyers for the available supply of domestic pulp-wood is becoming increasingly keen. Most of the mills are located in the south-eastern part of the country on the Glommen, Drammen and Skien rivers, which afford access through their water connections with the best timber areas of southern and central Norway. Contracts for wood supply are made to run from six months' periods and call for delivery of the wood at the river bank, roughly barked and cut to standard lengths. Timber is scaled and stamped by the purchasers' agents or through competitive timber-driving associations which handle all the timber floated on the principal rivers. Cost of handling wood from point of delivery to mills are pooled and distributed on the basis of quantity and distance. Both buyers and sellers are organized, but conditions do not favor the elimination of competition altogether.

Here, as in Sweden and Finland, much attention is given to the education of foresters and the personnel of those in charge of the forests—the forest-masters and engineers—is of very high grade. The State maintains a number of schools for the development of engineers and rangers, the courses including practical forest experience with theoretical instruction in the class-rooms. A university course in higher forestry is about to be established.

The same freedom from fire risks exists here as throughout Scandinavian forests generally. Well-built roads permeate all the principal forests and little settlements at short intervals of distant provide a permanent and ever-available fire-fighting force whenever required.

The attention given to the housing and care of the forest forces is worthy of note and explains in some measure the eagerness with which the young Norwegians adopt forestry as a profession whenever the opportunity to do so is afforded them.

News From Europe

(Courtesy of Newsprint Service Bureau.)

Minimum Price For German Paper.

Some points of special interest in connection with newsprint were made during the debate in the Reichstag. The publishers, for instance, admitted that there was no profiteering behind the present price, a conclusion which rather surprised the Assembly. As the Berliner Tageblatt remarks: "Dr. Scholtz with refreshing clearness and speaking for the Government stated that an exhaustive inquiry by the Bureau of Paper Tests of the Ministry of Economies had resulted in the fact that the price of newsprint could scarcely be reduced below 2½ cents a pound, without ruining the newsprint mills. In spite of this noteworthy admission of the Minister of Economies the manufacturers have reduced the present price of $4.86 a cwt. by 27 cents. in order to show the publishers that everything possible is being done to accommodate them. But we must point out that at this price 80 per cent of our mills will be unable to show a profit. Moreover the reduction of 27 cents is retroactive to April 1st, and is f. o. b. German ports."—"Papier-Zeitung," May 21, 1921.

NOTE: The figures are calculated on the present value of German money.

The Vienna Paper Market.

Stagnation on the Vienna market, which became so apparent with the beginning of April, has increased if that be possible. Complete quiet in nearly all business rules, and no change is anticipated at the present moment until the autumn. The lack of business is further accentuated by the trickery of the illicit dealer who is dumping his stock on the market at figures 25 per cent below current quotations. In this he is actuated by the acute money shortage and fear of greater losses. Consequently the legitimate trader who has held on for higher prices is unable to meet offerings of this nature. The mills, however, are working their machines despite the above mentioned fluctuations in offerings, and trade activity in this branch of industry continues brisk. The export trade has dropped almost to nothing. Revival of this business is not expected before a marked strengthening of Polish exchange, since at present Poland is the only outside market. But Poland is unable to buy owing to the low value of her money, although in other circumstances that country would be capable of taking large quantities of Austrian paper.—"Papier-Zeitung, June 11, 1921.

Free Imports of Newsprint in Poland.

A proclamation in the Polski Monitor declares that the Minister of Commerce has abolished restrictions on imports of newsprint which are now admitted free of duty.

—"Pappen und Holzstoff-Zeitung," May 19, 1921.

Spanish Newspapers Get a Rebate.

The Spanish Commission recently appointed by Royal proclamation has granted a rebate from the market price to (1) small periodicals consuming 100 tons, and (2) newspapers which have a yearly consumption of at least 100 tons. Newspapers are allowed to import newsprint, although the duty has again been put into effect.

—"Papier-Markt," June 10, 1921.

Free Trade in Newsprint in Czecho-Slovakia.

The Prague newspaper, "Tribuna," states that the duty on newsprint was abolished to 15 carloads a duty on newsprint was abolished June 1st, although imports of newsprint are limited to 15 carloads a month.

Swedish Offering Cheap Newsprint for Export.

The Swedish Newsprint Manufacturers have decided to offer paper in foreign markets at 3½ cents a pound.

—"Papier-Markt, June 10, 1921.

Heavy Decline in Norwegian Prices.

The dullness was broken by a sharp drop in wood pulp quotations on the Christiania exchange. Latest figures are: Easy bleaching, sulphite, 600 kroner per ton; strong, 530; prime sulphite, 800; easy bleaching sulphate, 550; kraft, 500; dry mechanical, 300; wet mechanical, 120; net cash f. o. b. South Norway.

—"Papier-Journalen, May 31, 1921.

Surplus Stocks of Newsprint in Norway.

Recent reports disclose the fact that there is an active demand for newsprint with the result that stocks are diminishing, but there is still a large supply and prices continue low. This circumstance and the impending general strike in Norway are checking operations by the mills. Newsprint makers are unwilling to commit themselves in view of these troubles.

—"Farmand, May 26, 1921.

Wood Pulp Production in Sweden.

According to the latest statistics published in "Svensk Pappers-Tidning," he output of chemical pulp from January to May was 8,732 tons of bleached sulphite and 119,557 tons of unbleached for shipment and 5,200 tons of bleached and 34,389 tons of unbleached for "private account," or 168,389 tons.

Normal production of the sulphite mills for this period is 270,000 tons. Deliveries in May were very small. Production of wet mechanical for the same period was 70,600 tons, as compared with the normal output of 110,000 tons.

UNITED STATES NOTES

Word received from Leesburg, Fla., by Miami Valley paper men who are in touch with the management of the Grass Fibre Pulp and Paper Corporation, indicates that the mill of this concern at Leesburg which is making pulp from sawgrass is steadily turning out its product with every promise of success. Samples of the Florida sawgrass fiber which were cooked in open wash tubs, beaten by hand and run on a wall-paper machine, were sent for examination to factory experts in the Miami valley last year. The "makings" of the real paper contained no glue sizing and no filler, being from pure sawgrass. It was especially noteworthy for its strength. The Grass Fibre Pulp and Paper Corporation is understood to have secured leases on untold acres of sawgrass and consequently will have no difficulty in obtaining raw materials. A specially devised harvesting machine is ready for use. With this it is expected to garner four times the amount of grass harvested in the past. It is planned to utilize other fibrous plants which grow in the South.

Commissioned by the American Forestry Association of Washington, D. C., to study forestry conditions in the Allied countries of Europe, Arthur Newton Pack, of Princeton, N. J., sailed abroad last week on the Aquitania. He will visit the war devastated areas of France, Great Britain and Belgium, and will report as to the needs of sending more tree seeds to help replace forests cut for war time needs. Mr. Pack will pay special attention to forestry methods in the Allied countries because of the forestry legislation now before Congress as embodied in the Snell-McCormick and Capper bills, consulting with General Lord Lovat, head of the British Forestry Commission; M. Debat, Minister of Forests and Waters of France, and M. Crahay, Minister of Waters and Forests for Belgium.

The Jefferson County National Bank, Watertown, one of the oldest banking institutions in Northern New York, has elected to its Board of Directors, J. Victor Baron, the vice president and general manager of the Sherman Paper Company. The bank's directorate already includes several other leading paper manufacturers of Northern New York.

Edward J. Brennan, who has charge of the Chicago office of the Investigation Bureau of the Federal Department of Justice, is at the head of an investigation, begun in Chicago last week, into the operations of an alleged stationers' trust. The inquiry follows revelations made recently by the pressure brought to bear on certain Chicago firms that attempted to undersell the alleged monopoly. Morris Panco, of Sydney Morris and Co., had attention directed to the alleged trust through a complaint charging that manufacturers and wholesalers in stationery supplies were refusing to sell them because they sold certain articles at lower prices than those charged by the combination. Mr. Panco alleges that certain manufacturers and dealers, by means of price agreements, made profits of 100 per cent. and more, resulting in excessive profits of more than $500,000 a year. The Federal Trade Commission began investigation of the stationery business early in 1919, following complaint of independent dealers.

Successful experiments have been made, in various forests of France, cutting trees by means of electricity, according to a recent consular trade report. A platinum wire is made white hot by an electric current, and used like a saw. In this way the tree is felled much more easily and quickly than in the old way.

A loss of over $10,000 was sustained by the Western Papermakers Chemical Company, Kalamazoo, Mich., through a fire last week in which two departments were completely burned out. Plans for making immediate repairs were announced by W. J. Lawrence, manager of the company, who said that the plant would continue operating, despite the damage done by the fire.

Running its mills with working forces made up of some old employees and many new hands, the International Paper Company, in an official statement issued last week, announces that most of its plants are again in operation, and that no difficulty has been experienced in recruiting new crews. The statement admits that in some localities it had to appeal for assistance to prevent trouble from interference with the right of its new workers to their employment. In the future, the company proposes to deal directly with its employees, whether they are members of labor unions or not, and to continue the practice of mutual bargaining through representatives whom the employees shall select. The new wage scale now in effect, while amounting to a reduction of 16 2-3 per cent. for all hourly-paid employees, and an average of 20 per cent. or a little more for common labor, is said by the company to be 95 per cent. above the 1915 rate of pay.

The Piqua Strawboard Company, which was recently formed to take over the American Strawboard Company's mills at Tippecanoe and Piqua, near Dayton, Ohio, is now in full operation under the management of Bert Helman, of Tippecanoe. It is manufacturing all grades of cap stock and colors and is equipped with a mill liner on one machine for parchment and other linings of high grade. A separate liner is also being installed for putting on moisture-proof linings. The Tippecanoe mill has been rebuilt and doubled in size and is modern in every department. Two paper machines are now being operated in place of one in the old mill.

Notification of a conference for the purpose of considering a further readjustment of wages was sent last week to officers of the Eagle Lodge of papermakers and affiliated organizations in Holyoke, Mass., by the Labor Commissioner of the American Writing Paper Company, acting for that company and other paper manufacturers in the vicinity. The conference is called for August 22, and the notice points out that wages have been reduced in other sections of the country where paper is manufactured in competition with the Holyoke mills. The papermakers' union will receive the communication officially at a meeting which will be held August 7.

Mr. Benjamin Gottesman, Vice-President of the Hudson Trading Company, New York, who was married recently is, with his bride, making an extended trip across the continent. Before he returns to the States, it is Mr. Gottesman's intention to visit the company's connections abroad as well as at the Stockholm office, the Hudson Trading Company Aktiebolag.

Technical Section

A-1. Matai Wood for Papermaking. World's Paper Trade Review, lxxv, 13. Matai or black pine is a large coniferous tree 40 to 80 ft. high, with a trunk 2 to 4 ft. in diameter. It occurs in the forests throughout New Zealand, from North Cape southwards. After experimenting it was found that although the pulp obtained had excellent felting properties, and yielded paper of good strength, it could not be satisfactorily bleached and the yield was low. It seems unlikely therefore, that this wood could be profitably employed as a papermaking material. A.C.

A-3. Bamboo Pulp. World's Paper Trade Review, lxxv, 8, p. 728. A discussion of an article on the utilization of bamboo for the manufacture of paper pulp from the Forest Economists Office, Dehra Dun, India, which appeared in the **Indian Forester.** A wealth of information is displayed on the subject, which has been fully investigated. A.C.

A-3. Marram Grass for Papermaking. Paper Maker and British Paper Trade Journal, lxi, 3, p. 369. Experiments with marram grass found at Blakeney Point, Norfolk, show that while a paper may be made from it it is not a suitable material out of which to manufacture fine papers. It requires more than three times as much bleach as that used for esparto without getting nearly so white a color.—A.C.

A-3. Fiber Experiments. World's Paper Trade Review, lxxv, 6. Scarcity of raw material for the manufacture of all grades of paper has led to experiments with straw, grasses and other fibrous materials for papermaking. Experimentally they can be used for the manufacture of paper but may not be successful commercially. A.C.

A-3; K-18. Paper from Rice Hulls, by W. P. TAYLOR. **World's Paper Trade Review,** lxxv, 6. The successful making of cardboard from rice hulls. Two mills are to be started in San Francisco. A.C.

A-3. Treatment of Papyrus. World's Paper Trade Review, lxxv, 6. A method patented by A. Pehouee, whereby plants growing by the side of rivers and ponds such as the papyrus, the hippopotamus plant and other herbaceous varieties, especially tropical plants, can be used economically.—A.C.

A-3. Paper from Bog Grass: Paper Maker and British Paper Trade Journal, lxi, 1. A mill located near Barranqueras, in the Chaco Territory, on the Parana river is using a raw material, a species of bog grass called "paja brava." This grass grows during the whole year and is very abundant. At present the mill is equipped to make only pulp in sheets and strawboard for paper boxes. It has a capacity of three tons strawboard a day.—A.C.

A-3. Papyrus Stems. The World's Paper Trade Review, lxxv, 12. A discussion of the stems of **Cyprus papyrus** as to their suitability as a papermaking material.—A.C.

A-3. Paper from Chinese Straw. World's Paper Trade Review, lxxv, 11. It is stated that Chinese chemists have discovered a new way of making finer grades of paper from native straw comparing favorably with the fine grades of imported stock. A mill for this purpose has been operated in Shanghai.—A.C.

A-3. Esparto Pulp in Spain. World's Paper Trade Review, lxxv, 11. The British vice-consul at Almeria (H. M. R. Harrison) reports to the Department of Overseas Trade that a Spanish company has been formed with a capital of four million pesetas with the object of making pulp from esparto grass.—A.C.

A-3. Bamboo Pulp. World's Paper Trade Review, lxxv, 13. The second article on bamboo pulp, dealing with its value as a raw material.—A.C.

A-3. Fijian Papermaking Fiber. World's Paper Trade Review, lxxv, 13. "Van" is the Fiji name for **Hibiscus tiliaceous** Linn, a small tree or bush widely distributed in the tropics. The stems give a good yield of pulp when subjected to mild treatment with caustic soda but the quality of the pulp is rather inferior. A.C.

A-3. Anhinga Stems. World's Paper Trade Review, lxxv, 13. Experiments with the Anhinga plant, which occurs abundantly in parts of Brazil, show that the anhinga stems yield a pulp furnishing a good brown paper, but the pulp cannot be bleached to a sufficiently pale tint for the manufacture of paper suitable for writing or printing purposes.—A.C.

A-3. Kokerboom as Papermaking Material. World's Paper Trade Review, lxxv, 14. Tests with Kokerboom carried on at the Imperial Institute, London, show that, on the whole, the grass is not a promising papermaking material and that it is inferior for this purpose to other South African products, such as the tambookie and other grasses, which have been examined at the Imperial Institute.—A.C.

A-3. Papyrus Sive Ars Conficiendae Papyri. Paper Makers' Monthly Journal, lix, 3. The preface and introduction of a quaint old latin poem dated 1693, which relates the story of the art of making paper. This curious poem was unearthed some years ago by AUGUSTIN BLANCHET, president of the French Technical Association.—A.C.

A-3. Paper Pulp from Bagasse. Paper Making, xl, 4. This article by C. J. WEST, on the use of an important new source of pulp for papermaking, the use of which will materially prolong the productive life of the pulp and paper industry in Canada.—A.C.

A-11. Felspar and China Clay. China Clay Trade Review, iii, 21. Extracts from an interesting pamphlet issued by the Imperial Mineral Resources Bureau, containing facts about the production and uses of felspar and cornish china store.—A.C.

A-11. Colloidal Properties of Clay. China Clay Trade Review, iii, 21. A discussion and comparison of English and American china clay and their respective colloidal properties.—A.C.

A-11. Pottery Clays, by JAMES SCOTT. **China Clay Trade Review,** iii, 21. Description of the minute features and conduct of pottery china clays.—A.C.

A-11. A New Clay Loader. China Clay Review, xi, 23. A highly colloidal clay, Wilkinite, has been found by the U. S. Forest Products Laboratory to be valuable as a loading material for giving finish and printing qualties to book paper. This clay exists in large deposits in the intermountain regions of the United States.—A.C.

A-14; K-0. Paper Standardization. World's Paper Trade Review, lxxv, 6. The principles of a basis for agreement in the standardization of paper.—A.C.

A-14. Tearing Strength of Paper. World's Paper Trade Review, lxxv, 6. Tests used in tearing paper and a method under development, which will give data that may be interpreted to show the strain on the paper which tearing produces.—A.C.

A-14. Testing Gloss on Paper. World's Paper Trade Review, lxxv, 12. Description of an instrument for testing the gloss on paper invented by L. R. Ingersoll. —A.C.

A-14. The Glarimeter. Paper Makers' Monthly Journal; lix, 3. Describes the use of the Ingersoll glarimeter for the measuring of the glare or gloss of paper. —A. C.

A-14. Test for Alum in Paper. World's Paper Trade Review, lxxv, 12. A method for determining the presence of sulphate of alumina in paper.—A.C.

A-14. Pocket Quadrant Demy Balance. Paper Makers' Monthly Journal, lix, 3.. An illustrated description of paper estimating machine of Vandome, Titford & Company, Ltd., 5 St. Mary Axe, London, E.C. 3.—A.C.

A-14. Paper Durability. Paper Making, xl, 4. An article by MM. ARIBERT and BOUVIER of the French School of Paper Making, on the effect of loading materials such as china clay and the durability of the paper in which they are largely used. Except in the case of technical and financial journals, the use of heavily loaded pulps of inferior quality does not decrease the durability.—A.C.

A-15. Tests for Unbleached Sulphite and Sulphate Fibers, by R. E. LOFTON and M. F. MERRITT. **Paper Maker's Monthly Journal,** lix, 2. Review of the various methods proposed for distinguishing between unbleached sulphite and sulphate fibers and describing the development and application of a new method for accomplishing the result. (For complete article see **Technical Association Papers,** Series III.)—A.C.

A-16. Testing and Inspection of Cement, by E. J. MASON. **Canadian Engineer,** xl, 7, p. 225. How cement purchased by Hydroelectric Power Commission of Ontario is sampled and tested.—A.C.

B-4. Jack Pine for Paper Pulp. Paper Making, xl, 4. An article on the use of an important new source of pulp for papermaking, the use of which will materially prolong the productive life of the pulp and paper industry in Canada.—A.C.

B-4. Jack Pine for Papermaking. World's Paper Trade Review, lxxv, 9, p. 824.—A. C.

B-9. Ontario's Pulpwood Industry. Paper Maker and British Paper Trade Journal, lxi, 2. A drop in price of probably $2.00 per cord is looked for in the fall.—A.C.

B-0. Wood Substitute. Can. patent 208,664 JOSEPH H. DAVIGNON, Longueil, Quebec, Canada, Feb. 22, 1921. The herein described composition of matter, approximately consisting of glue 1 lb.; potato starch 1 lb.; common paper scrap minutely cut up 1 lb.; pure water for each cubic unit of 6 ft. square by 1/8 in. thick gal. 2. —A.P.-C.

E-2. Sulphite Spirit. World's Paper Trade Review, lxxv, 13. A discussion of the successful utilization of spent sulphite liquor.—A.C.

F-5. Saving Digester Waste. World's Paper Trade Review lxxv, 14. A description of an apparatus for removing fiber, the patent for which has been granted to WM. M. WALLACE, Canon Grove, Denny, Scotland. The advantage of this invention is to provide a ready means of washing out fiber from the spaces between the perforated bottom and the false bottom and below the latter so that this fiber is saved and is prevented from getting to the evaporators.—A.C.

H-5. Bleach and Bleaching. Paper Making, xl, 3. A paper on the subject by F. D. LIBBY, read before the American Pulp and Paper Mill Superintendents Association.—A.C.

H-0. Cutting Bleach Cost, by L. D. VORCE. **Paper Making,** xl, 2. The cost of bleaching is very much lessened when the paper maker makes his own bleach. —A.C.

K-5; K-6. Mechanical Rammers for Digesters. World's Paper Trade Review, lxxv, 6. Description of a mechanical rammer used for compressing in the digester, straw and other materials which swell.—A.C.

K-6. Recovering Paper Stock. World's Paper Trade Review, lxxv, 12. An article on the recovery of waste papers.—A.C.

K-7. Formation of the Sheet. World's Paper Trade Review, lxxv, 12. An article stating how a well made sheet or a poorly made sheet can be made in the beater engine and an illustration given of each case.—A.C.

K-7. Continuous Automatic Mixing System for Paper Stock. Paper Making, xl, 4. A paper by EDWARD J. TRIMBEY, read before the American Technical Association of the Pulp and Paper Industry. —A.C.

K-7. Beating—Today and Tomorrow. Paper Making, xl, 3. An address by W. B. Campbell read at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association.—A.C.

K-8. Paper Dyeing, by O. KRESS. **Paper Making,** xl, 2. A detailed description of the dyeing of paper and the matching of shades.—A.C.

K-8. The Dyeing of Paper Pulp. World's Paper Trade Review, lxxv, 6.—An interesting discussion on the effect of wrapping paper on yarns.—A.C.

K-8. Dyeing Paper Pulp. Paper Making. xl, 3. In a lecture on "The Dyeing of Paper Pulp" J. HUEBNER explains the different factors to be considered before satisfactory results can be obtained.—A.C.

K-9. Paper Fibers in Relation to Mineral Loaders. China Clay Review, xi, 23. An illustrated article describing the chemical and physical characteristics of fibers and loading materials.—A.C.

K-9. Retention of Clay in Paper. Paper Making, xl, 4. An article on the problem of maximum retention of clay in paper both from the point of view of economy and the natural desire to see that every pound of loading added to the pulp in the beating engine is ultimately produced in the manufactured paper, and also from the necessity for securing a maximum printing effect —A.C.

K-10. Glue Hints. Paper Container, iv, 5. An abstract from a booklet on Glue Handling by the late FREMAN KAHRS giving some useful information on this adhesive.—A.C.

K-10. Chemical Reactions in Sizing Paper. Paper Making, xl, 4. A paper by W. E. BYRON BAKER read before the American Technical Association of the Pulp and Paper Industry.—A.C.

K-10. Substitutes for Alum in Papermaking. Paper Maker, xl, 4. A paper by MAX CLINE, read before the American Technical Association of the Pulp and Paper Industry.—A.C.

(Continued on page 818.)

PULP AND PAPER NEWS

The chief topic of interested discussion in pulp and paper circles continues to be the Riordon position. Practically everywhere among business men one hears keen disappointment expressed that Canadian money has not, so far, been forthcoming in sufficient quantities to save the situation. A high financial authority of Toronto, who was good enough to discuss the matter with the writer, gave me his views as follows: "In the first place," he said, "it must be borne in mind that financial interests, which ordinarily might have been expected to come forward to assist the Riordon reorganization scheme to go through, are many of them, not without their own embarrassments at this juncture. Money, just now, is not readily available for a project of this nature. Secondly, there has been an enormous lot of unfavorable comment—much of it very likely unjustified—on the expenditure incurred on the Kipawa plant, and this has had a very detrimental effect on the readiness of the public to invest. Thirdly, the market for the products of the concern is at present in a depressed condition, and, though the demand for pulp may probably be expected to revive before long, just when the revival will take place is a matter of uncertainty. Finally, the whole matter came before the investing public in a very unfortunate way. Weeks of unfortunate rumors have been succeeded by weeks of delay, equally unfortunate, as regards the prospects of adequate financial assistance being forthcoming, during which no report, save of the vaguest kind, as to how matters were going, were issued, and ultimately public interest of a salutary kind waned. In some form or other, the enterprise must survive. It is possible that the alternative refunding scheme which is to be profounded, but of the details of which we, as yet, are ignorant, may be more successful than the plan which has failed to evoke the requisite financial response, but, should it fail, other alternatives yet remain to be tried. One may certainly hope that the American bond-holders will not, in effect, get control of this Canadian concern. Heavy holdings of Riordon, by the way, are in Boston and its vicinity. It has been suggested that the sale of parts of the Company's properties should be resorted to, in order to help tewards the liquidation of liabilities. But it is obvious that this course would have the effect of wiping out part of both preferred and common stock.

Mr. I. W. Killam, of the Riordon Directors' Committee, has been visiting both Toronto and Ottawa. It is thought possible that, while in those cities, he has been able to arrange for further extensions of time with large creditors.

In connection with the Riordon position, the Toronto Globe, in an article headed **Riordon's Crisis**, says, in part: "At present prices, the issues on the market have a valuation of only $1,042,500, as against the par valuation of $43,000,000 and a market value at the top price in each case of $19,550,000. The market value of the old Riordon common reached 226 at the high last year, and is now down to 4. The high price for the new Riordon common was 7, and it is now ¾. The new Riordon preferred was as high as 41, and is now down to 6."

Helen Mines, a village in the Michipicoten district, near Sault Ste-Marie, Ont., has been wiped out by forest fires raging in that section. The village has been unoccupied, except by a watchman, since the mine, which belongs to the Algoma Steel Corporation, ceased operations in 1918. Mining operations were first commenced there some twenty-two years ago, and at one time the village had a population of 400.

It is satisfactory that the Province of Quebec is, at the present time, wholly exempt from forest blazes. Experts of the Forestry Branch of the Department of Lands and Forests are busy compiling reports on damages done by recent outbreaks, some of which unfortunately, were of very serious dimensions.

It is not, perhaps, very clearly appreciated how large and important are the two pulp areas which have been recently disposed of by the Ontario Government to two Toronto bidders. The Nagagami timber limit, for which the bid of the Transcontinental Development Corporation has been accepted, comprises 2,300 square miles. The Long Lake Limit, which goes to Y. H. Black, acting for a syndicate, is still larger, covering 3,400 square miles, In the case of the former sale, the purchasers have to contract to erect a pulp mill costing $1,000,000 and having a daily production of 100 tons of pulp and employing 700 persons. In the case of the latter sale, the purchasers have to erect a mill costing not less than $1,000.000 and producing 150 tons of pulp daily and employing 300 persons. In each case, the purchasers are to pay 80 cents a cord for spruce and 40 cents for other woods and $2.50 a 1,000 feet for red and Abitibi pine. Water power rights are reserved to the Crown, and provision is to be made whereby the purchasers may utilize certain streams to generate power for their mills. Each purchasing body has to erect, when so instructed by the Minister of Lands and Forests, a paper mill of 75 to 100 tons daily capacity.

The Abitibi Pulp and Paper Company, Ltd., has been successful in securing a big contract for the supply of newsprint from a large and well-known group of American publications.

The Technical Section of the Canadian Pulp & Paper Association has elected to full membership, Mr. F. O. White and Mr. L. M. Smith, both with the Brompton Pulp and Paper Co., East Angus, Que.

Mr. A. L. Dawe, Secretary of the Canadian Pulp and Paper Association, has returned from a trip to Clarke City. A number of American newspaper men were in the party. The visitors were surprised to find a comfortable, prosperous community of 600 or so, with good houses, etc. The pulp mill is operating and a vessel is expected this week to take on a cargo of groundwood.

The large brass foundry of T. McAvity & Sons, at St. John, N.B. is temporarily closed. Customers can be taken care of from stocks on hand.

The Tallman Brass & Metal Co. have prepared a new stock list which will be of interest to the pulp and paper industry.

The Union Sulphur Company whose general offices at 17 Battery Place, New York, have been familiar to Canadians for many years have moved to the Frasch Building, 33 Rector Street, New York. The Frasch

Building is fifteen stories high and is located at the corner of West and Rector Streets and was built by the Union Sulphur Company who will occupy four floors and lease the balance. The building is fittingly named in honor of the late Herman Fasch founder of the Union Sulphur Company and who, until his death in 1914, was its president.

Mr. Guy Tombs, traffic manager for the Canadian Export Paper Co., and Mrs. Tombs, are spending a three weeks holiday at Halifax. They are accompanied by their son, Laurence, of Quebec.

The A. G. fur Zellstoff und Pappenfabrikation, Charlottenburg, has distributed a dividend of 15 per cent, plus 10 per cent bonus. Not so bad for a "down and out" industry in a "bankrupt" country.

PAPER IN FRANCE.

There is practically a state of war between the Scandinavian pulp mills and the French paper mills, over pulp contracts. The former wish to stand by the contracts made last year, while the latter claim that it is impossible for them to do so.

The French paper mills, through their Association ("Syndicat des Fabricants de Papier et Carton de France") have submitted the following facts to the Scandinavians:

Current contracts involve a total of about 37,635 tons and 23 buyers.

Of this amount, the Norwegian contracts are for 4,904 tons (dry weight) of mechanical pulp, and 966 tons (dry weight) of bleached pulp, while the Swedish contracts are for

3,000 tons of mechanical pulp.
24,449 tons of strong unbleached sulphite.
3,000 tons of easy bleaching sulphite.
740 tons of bleached sulphite.
575 tons of kraft pulp (all dry weight).

Counting the Norwegian exchange at 240 and the Swedish exchange at 325, the value of this pulp, at the present contract prices, would be 91,500,000 francs, the mean, f.o.b. prices being 150 francs per 100 kilos for groundwood and 270 francs for unbleached sulphite.

To this must be added the cost of transportation by water and rail, and the duty; so that for a mill situated in or near Paris the total cost would be about 171 francs for dry groundwood and 286,40 francs for unbleached sulphite. At this rate the cost of newsprint would be 272 francs per 100 kilos, as shown below:

	Francs.
30 kilos sulphite pulp at 286.40 francs	85
65 kilos groundwood at 171 francs	111
10 kilos waste papers at 60 francs	6
Miscellaneous, sizing, etc.	2.05
160 kilos coal at 130 francs a ton	21
Cost of manufacture	46
Total	272

At the present time newsprint cannot be sold higher than 150 francs. There are offers of Swedish newsprint at 125 francs c.i.f. Rouen, and of calendered Norwegian paper at 140 francs c.i.f. Rouen. There is even talk of 114 francs for newsprint.

It is therefore utterly impossible for French paper makers to stand by the contracts passed last year; and unless the said contracts are completely changed all the French paper mills will have to shut down.

At a convention of the paper manufacturers held on the 2nd of May, the following principles were put forward to serve as a basis for modification of existing contracts.

1) Initial reduction of prices.

2) Option for the buyers to obtain an extension of the terms of the pulp deliveries.

3) Eventual prolongation of the payments on the quantities to be delivered during 1921.

4) Option for the buyers to annul the contracts either in whole or in part.

5) Option for the buyers to modify the first condition by new contracts.

Owing to the general situation in French industrial circles, the French manufacturers were unable to form a delegation to send to Sweden, as the heads of the large concerns were forced to remain at home. The proposals were therefore submitted through their agent.

As far as can be judged at present, the Swedes seem to have taken the matter in the proper spirit and have replied that they would be willing to go to Paris to discuss the matter.—A. P.C.

(From La Papeterie, May 25, 1921.)

Price of French Newsprint.

In its monthly market report the "Courier du Livre," of June, says:

"We look for a rapid recovery to normal quotations and believe that prices will be stabilized in the neighborhood of $110 per ton for French newsprint, $100 per ton for Finnish, and about $95 per ton for the Scandinavian."

U.S. NEWSPRINT INDUSTRY THREATENED.

In a statement issued by International Paper in Connection with its labor re employment problem to clear up misunderstandings, it is said in part:

"It has been repeatedly stated that the reduction in employes' wages was 30 per cent. This is not the fact. The reduction in wages is 16 2-3 per cent for all hourly paid employes except common and ordinary labor, the rates which average a little over 20 per cent reduction and are 38c and 40c an hour. The new or reduced wage rate for all hourly employes still leaves the average rate 95 per cent higher than in 1915.

"During 1920 company's contract price for newspaper was up to $130 per ton f.o.b. mill, whereas its present contract price is $95 a ton, at which reduced price there is not sufficient market to fully operate the mills. This reduction in selling price means the company must lose $35 a ton revenue. The new wage rate means the employes will bear approximately $4 ton of this.

"German and Scandinavian paper is now offered in New York, Boston, Philadelphia and other places at $77 ton delivered.

"Considerably over three-quarters of a million tons of Canadian paper is sold in the United States yearly. The present advantage to the Canadian manufacturer in the money exchange rate between the value of Canadian and American money received for this paper amounts to approximately $10 to $15 a ton.

"Wages must bear some part of the foregoing revenue losses and differences in price if the paper industry in this country is to continue to exist."

ELECTRIC POWER FOR PULP MILL.

Mr. Angus McLean, of the Bathurst Co., has contracted to connect the Nepisiquit power plant with the Dominion pulp mill, and the Fraser companies have contracted for the power for the pulp mill.

Continued from page 815.

K-12. Spraying Device. World's Paper Trade Review, lxxv, 8, 712. The object of this invention by Robert W. Stevens is to arrange a shower pipe in close relation to the cylinder roll or mould to be sprayed, and provide for longitudinally moving the pipe and arrange within the pipe a series of swales, which as the pipe is moved, will clear the openings in the pipe so as to permit the water to be freely discharged.—A.C.

K-12. Handling a Breast Roll. Paper Making, xl. 2, (from **Pulp and Paper** Dec. 30, 1920). Following a letter of inquiry the Pusey & Jones Company describes a device for handling breast rolls and explains its operation.—A.C.

K-12. The Life of Fourdrinier Wires, by J. D. WATSON. **Paper Making,** xl, 2. How wire cloth for Fourdrinier machines is made; a few of the causes of destruction and how some of them may be avoided.—A.C.

K-12. Speed Interlock as Applied to Paper Machines. World's Paper Trade Review, lxxv, 14. A paper by F. G. WARBURTON read at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal; **World's Paper Trade Review,** lxxv, 15—a review of the various comments Mr. Warburton dealt with, following his paper on the subject, before the Canadian Pulp and Paper Association.—A.C.

K-17. Book Paper from Pine. Paper Making, xl, 2. Trials made at the U.S. Forest Products Laboratory, Madison, Wis.—A.C.

K-23. Photographic Base Paper. World's Paper Trade Review, lxxv, 16.. An article describing a new enterprise for the manufacture of photographic base papers.—A.C.

K-0. Developments in Papermaking from an Engineering Point of View. Paper Makers Monthly Journal, lix, 3. A paper by T. D. NUTTALL read at the Technical Section of the Paper Maker's Association, Manchester, June 13, 1921.—A.C.

L-4. Manufacture of Paper Containers. Paper Container, iv, 2. The fourteenth article, of a series on paper containers, describing the cartoon or folding box.—A.C.

L-4. Manufacture of Paper Containers. Paper Container, iv, 3. The fifteenth article of a series on the manufacture of paper containers.- A.C.

L-4. Boxes for Groceries. Paper Container, v, 4. An abstract of a lecture by J. GILBERT MOSS to members of the grocery trade classes conducted in the Royal Technical College, Glasgow, on paper and paper boxes.—A.C.

L-4. Manufacture of Paper Containers. Paper Contaner, iv, 5. An article describing the manufacture of paper containers, the seventeenth article of a series.—A.C.

L-4. Corrugated Boxes. Paper Container, iv, 5. An article describing how to seal corrugated boxes for freight and express shipment.—A.C.

L-7. German. Paper Yarn Industry. Paper Maker and British Paper Trade Journal, lxi, 2. A description of the unexpectedly rapid development of the paper yarn industry in Germany and a list of industries where paper yarn is of the most use.—A.C.

M-0. Recording Devices. World's Paper Trade Review, lxxv, 12. An article describing the various uses of recording devices in pulp and paper mills.—A.C.

N-4. Pulverized Coal. Paper Makers Monthly Journal, lix, 3. An abstract from the third annual report on colloidal chemistry and its general and industrial application issued by the Department of Scientific and Industrial Research dealing with the plasticity and binding qualities of clays.—A.C.

N-6. Economic Utilization of Heat and Power in Paper Mills. Paper Makers' Monthly Journal, lix, 2. A discussion of W. Adamson's paper on utilization of heat and power in paper mills, at a special meeting of the Technical Section for that purpose. Important items mentioned in his paper included the testing of coal for its calorific value, the recording of CO_2 in the boiler house, high steam pressure for power production, etc. The paper was described by Alexander MacIvor as a remarkably accurate summary of the best up-to-date power plant engineering for paper mills. (See **Pulp and Paper Magazine,** Nov. 11, 1920, for article.)—A.C.

N-7. Hydroelectric Developments in South America. Industrial Management, lxi, 3, p. 93. The vast resources for the development of hydroelectric power in the countries of South America and the efforts that are being made to cheapen the cost of fuel for transportation and other purposes in these regions.—A.C.

N-7. Testing Turbine Efficiency by Pressure Measurement. Engineering News Record, lxxxvi, 11. Gibson method and apparatus investigated experimentally and used in practice in determination of discharge of water wheels in new Niagara Falls plant by Norman R. Gibson, hydraulic engineer, Niagara Falls Power Company, Niagara Falls, N.Y.—A.C.

N-7. Ice Formation and its Prevention, by JOHN MURPHY. **Canadian Engineer,** lx, 10. Methods for the prevention of the formation of ice in hydroelectric practice.—A.C.

N-7. Control of Winnipeg and English River Waters. Canadian Engineer, xl, xix . An article on the predicament, the withdrawal by the Ontario government of the bill to clothe with adequate powers the Lake of the Woods control board named by order-in-council in 1918, has left both Ontario and Manitoba. The proposed mill at Kenora, Ont., is affected by the discussion.—A.C.

N-7 & 9. Paper and Waterpower. World's Paper Trade Review lxxv, 16. An article on the increased use of electrical energy for all industries, but particularly in the paper industry.—A.C.

N-0. Snow Surveying in Forecasting Stream Flow by J. E. CHURCH, Jr. **Engineering News Record,** lxxxvi, 6, 7. Methods, factors and results making spring predictions of summer water supply for irrigation and power in streams fed by mountain snows.—A.C.

N-0. Electricity on Heat Economy Lines. World's Paper Trade Review, lxxv, 17. An interesting discussion by the Technical Section, of Mr. MALLINSON's paper.—A.C.

N-0. The Production of Energy from Heat. Paper Makers Monthly Journal, lix, 3. An abstract of an address delivered at the opening meeting of the North Western centre of the Institution of Electric Engineers, taken from the **Machinery Market,** December, 1921.—A.C.

O-3. Purification of Waste Waters, by E. V. CHAMBERS. **World's Paper Trade Review** lxxv, 10.—A.C.

Q-4. Proportioning Concrete on Job by Exact Methods, by R. B. YOUNG and T. V. McCarthy. **Engineering News Record,** lxxxvi, 11, also **Canadian Engineer,** xl, 9. Development of water cement ratio and surface area theories permit changes of proportions to produce 35,000 cu. yq. of concrete of desired strength.—A.C.

Q-4. Concrete Forms and Surface Treatment, by T. FREEMAN BLACK. **Canadian Engineer,** xl, 8. Economic purposes that forms must fulfill—steel often more profitable than wooden forms—some doubtful "savings" in concrete construction—better specifications required.—A.C.

R-1. Woodpulp in Argentina. World's Paper Trade Review, lxxv, 12. The opportunities for development of pulp in Argentina are many, one of the special advantages being the adequate means of transportation by water.—A.C.

R-1. Pulp Manufacture in Chile. World's Paper Trade Review, lxxv, 6. The information now collected includes the results of experiments and investigations which have been carried out.—A.C.

R-3. Making Statistics Talk, by M. C. RORTY. **Industrial Mangement,** lxi, 1. The popular language of graphs. How charts and diagrams may best be prepared for directors' meeting, executive committees, employees untrained in graphics, stockholders, and for general publicity purposes.—A.C.

R-5. Costing in Paper. World's Paper Trade Review, lxxv, 6. Some interesting points for merchants brought out in a pamphlet issued by the Cost Accounting Committee of the National Paper Trade Association of U.S.A. on the Standard Classification of Expenses. —A.C.

R-5. The Paper Situation. Paper Container, iv, 2. A discussion of the condition of paper industry in Europe.—A.C.

R-5. German Paper in Holland. World's Paper Trade Review, lxxv, 12. William Smit, a Dutch printer writes to the **Daily Mail** complaining of the lack of business enterprise on the part of British manufacturers and merchants.—A.C.

R-5. The German Paper Industry. World's Paper Trade Review, lxxv, 13. An article telling how exports subsidize inland sales.—A.C.

R-5.—The German Paper Industry. World's Paper Trade Review, lxxv, 17. A supplementary report, based on statistics prepared for the Reichs office, which during the war, controlled the supplies of wood to mills producing newsprint, has been issued by the Federation of British Industries.—A. C.

R-7. How to Avoid Strikes. Industrial Management, lxi, 3, p. 77. An interview with John Hays Hammond in which he makes the statement "The secret of avoiding strikes lies in personal contact."—A.C.

R-7. Less Wages or More Work by MAXWELL DRAKE. **Industrial Management,** lxi, 3. The alternatives to a decreased production. A 20 percent increase in production is safer and saner than a 20 percent decrease in wages—and why.—A.C.

R-7. Mitigating Unemployment, by J. J. MALLON. **Paper Container,** iv, 2. A scheme whereby unemployment shall not cause so terrible a strain on the industrial world as the present situation is now revealing. A.C.

R-7. A Shop Committee that Failed, by O. F. CARPENTER. **Industrial Management.** The experience of one firm that introduced "Industrial Democracy." —A.C.

R-7. Elimination of Wastes, by HERBERT HOOVER. **Engineering News Record,** lxxxvi, 8. Possibilities in the elimination of wastes and the intelligent direction of productive power to reduce unemployment and labor friction are outlined.—A.C.

R-7. What Personality Means to the Workers, by J. EDWARD LANGENDORFER. **Industrial Management,** lxi, 1. The right personal touch gets results when hard and fast methods fail.—A.C.

R-8. Chart for C.I.F. Costs. Paper Maker and British Paper Trade Journal, lxi, 2. The Hodge-Sheriff Paper Company, Craven House, Kingsway, London, has issued an ingenious and simple chart, which has been designed and published by them for instantly ascertaining the c.i.f. cost of papers imported from Canada and purchased in currency f.o.b. the Canadian port. The chart has been principally designed to assist importers of Wayagamack kraft papers, which are meeting with a steadily increasing demand in the United Kingdom.—A.C.

R-9. Paper for British India. World's Paper Trade Review, lxxv, 8, p. 746. An article giving the revised tariff valuations for imports.—A.C.

R-11. Experimental Paper Mill for Siam. World's Paper Trade Review, lxxv, 11. The Siamese government has planned to purchase a small experimental paper mill for use in Bangkok, Siam, for the purpose of developing the use of raw materials such as Lalang grass, rice straw and banana stems for papermaking. These materials have been previously worked out by the Bureau of Standards, Washington, and a fairly good grade of paper has been produced; it is possible for some of this paper to be used by some of the governments departments in Siam. The mill will be shipped complete in all details and it is stated that the Siamese government has decided to obtain the services of an American to install the mill, start operations and teach the natives to handle it.—A.C.

R-11. The University and the Industry. World's Paper Trade Review, lxxv, 13. In an address by General Sir Arthur Currie to the members of the Canadian Pulp and Paper Association, he referred to the need in the paper manufacturing, for the unity of the university and industry.—A.C.

R-11. Papermaking Puzzles. Paper Makers Monthly Journal lix, 3. A paper by F. HECKFORD, read before the London division of the Technical Section.—A.C.

R-12. Costs in the Paper Mill. Paper Making, xl, 2. James A. Reilly describes a cost system that contains practically every item of expense and reserves to care for unexpected contingencies that might reduce profits in final closing.—A.C.

R-12. Cost Accounting Fundamentals. B. E. HUTCHINSON, **Paper,** xvii, 22, 26 (Feb. 2, 1921). Brief discussion of commercial or general accounting, suggested schedule of items to be included in manufacturing costs, suggested schedule of items to be included in selling price estimates, and comparative selling price estimates.—A. P.-C.

R-12. Cost Accounting Fundamentals. Paper Industry, ii, 11. An article by B. E. HUTCHISON, of the American Writing Paper Company, giving a discussion of cost accounting.—A.C.

R-13. Technical Section of the Paper Makers' Association. World's Paper Trade Review, lxxv, 14. An interesting and instructive paper by E. A. DAWE, on the rise and development of H. M. Stationery Office as a purchaser of paper, read before the members of the London area.—A.C.

R-0. Waste Matter. Paper Making, xl, 3. An Article dealing with the necessity of saving what is called waste matter.—A.C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 30th July. The strike of the compositors still drags on. Instead of getting closer together, as time has gone on, the parties to the dispute seem to be wider apart than at the moment when the strike commenced. Where it is most difficult for them to reach an agreement is over the question of the forty-four hour week. On this particular matter feeling runs high on both sides. The men contend that a promise of a forty-four hour week, commencing on the first of June this year, was made to them. The employers, on the other hand, are equally explicit in their denial that any such promise was made. In substantiation of their denial, the employers have issued the following statement over the signature of their negotiating committee in the year 1919, namely, Messrs. Richard Southam, Douglas Murray, William L. Cope, Noble Scott, George M. Rose, and T. M. McLean: "We, the members of the Negotiating Committee appointed by the Master Printers' and Bookbinders' Association of Toronto, who negotiated the agreement with the International Typographical Union, Local No. 91, effective June 1st, 1919, and expiring May 31st, 1921, do solemnly swear and affirm that no agreement was entered into with Local No. 91 in connection with a forty-four hour week becoming effective on June 1st, 1921, and everything which was agreed to in our negotiations is in the agreement as signed by all members of the Committee representing Local No. 91 and the Master Printers' and Bookbinders' Association of Toronto; and we further swear and affirm that not during any private or individual conversations while negotiating did we say the forty-four hour week would be granted in 1921." Thus there is here a direct conflict as to the facts, and, when an industrial dispute assumes that form, a way out of the *impasse* is hard to find.

The paper market, as a whole, remains quiet. The last couple of weeks in July and the first week or so of August are, normally, slack weeks in the paper trade. And, with buyers restricting their purchases, for the most part to immediate requirements at present, the slackness that is to be expected at this season is more pronounced than ever. What is needed, for a revival of business in nearly all lines, is not lower prices—strangely enough, in many lines where there has been a considerable price recession, there has been not an iota of stimulation of the demand—but increased consuming demand, and, in fact, increased consumption. These increases are not expected to take place, in sufficient volume to make themselves appreciably felt, for some weeks yet, but there are certainly signs that business conditions generally—and it is on these that the state of the paper trade depends—are picking up somewhat, though admittedly both move slightly and more slowly than is desirable. However, one important mill-owner told the writer, the other day, that, in most lines in the paper trade, "a normal business—not a business on the same scale as last year's, but a normal business—will be doing by the end of this year." Let us trust that he is right, and even that the date of normality may come sooner than he anticipates!

PULP.—There has been some slight improvement in the demand for pulp. Mills are working, some of them, at a very fair percentage of capacity, but, as the representative of one of them remarked to the writer, they are, to an extent, working on hopes of business, rather than on a certainty of it. Various tendencies seem to be making for a decrease in prices. Paper mills are not too anxious to stock up largely with pulp. Partly this reluctance can be ascribed to the downward movements that are looked for in the price of newsprint. Then, again, the competition from Norway and Sweden is a factor which is probably making for a reduction in the price of pulp.

NEWSPRINT.—The newsprint business continues to be moderately good, all things considered. Some of the mills are closing some fairly large contracts. There have been whispers that some of them, in order to secure the business, have made some substantial price concessions, but the writer is very sceptical as to the truth of this. $80 a ton is a figure which has been freely hinted about as having been a fine price taken, in certain cases, but the writer can obtain no information which looks like corroborating this. However, as was mentioned last week, those in charge of newspapers are very confident that the newsprint is coming down in price soon. "In the last quarter of the year there will be a substantial downward revision of newsprint prices"—that is what one constantly hears in newspaper circles. Of course, it is possible that the wish is father to the thought, but the people who talk this way are very emphatic that they are correct—they claim to have got the tip from the stable, so to speak. They point, further, in support of their contention to what they claim to be the fact that, while newsprint production has increased enormously during the past year, the amount of newsprint sold from January to June of this year is not more than three-quarters of the amount sold in the corresponding period of 1920.

BOOK PAPERS.—A representative of one of the leading mills informs the writer that the volume of orders coming along for book papers shows a definite increase, although the orders themselves are not so large as is desirable. The same remark applies to writing papers.

TOILETS AND TISSUES.—One of the principal manufacturers of toilets and tissues had this to say: "Our mills are working to capacity. Business in tissues can be described as very good. You can do fair business in toilets, too, if you get after it—but it needs getting after." There has been no further recent change in prices.

NEW YORK MARKETS.

New York, July 30. (Special Correspondence.)—Probably the outstanding feature of the paper market in New York this week is the easiness in newsprint. When all the circumstances surrounding the situation are taken into consideration it is not surprising that newsprint has developed weakness. This is the season when consumption of print paper is at its lowest. A glance at any of the big metropolitan newspapers alone will show that this is true. The Friday afternoon and

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Saturday afternoon dailies are publishing issues as small as eight pages, the Saturday morning papers range only between 16 and 24 pages, while all during the week local papers show a marked decrease in the number of pages. This doubtless is the situation all through the States, and is nothing unusual for this time of the year when business is quiet and advertising, particularly by the large department stores, is down to a minimum.

Coupled with the drop in consumption of newsprint is an increase in production, made possible by a resumption of operations by practically all of those mills which this time last month were shut down because of the strike. This obviously makes for an easy market condition, and the offering of newsprint by German and Scandinavian producers at low prices tends to accentuate the weakness. Spot newsprint in standard rolls is reported selling at 4.75 cents per pound and less. The contract basis remains unchanged at 4.75 cents, but according to authoritative reports the spot situation is steadily becoming weaker, and it is said that firm bids at a good deal under the contract lever are being frequently accepted. Another reason for the softness of the spot market are reports to the effect that another sharp cut in prices to contract customers will be made on deliveries during the final quarter of the year. It is stated that the rate for the last quarter will be 4.25 cents a pound, or $85 per ton. If this proves to be correct it will establish an average for the full year of 5.25 cents a pound, or $105 a ton. These reports have their origin it is stated, from authoritative sources in Canada, and for this reason most members of the trade here are inclined to believe them more or less accurate. General opinion in publishing circles of New York has been for some months past that newsprint prices would gradually work downward until they reached 4 cents a pound, or close to that figure, and some have expressed the belief that prices would go as low as 3.50 cents before becoming fully stabilized. No one has looked for pre-war prices to return, but it has been felt by a great many consumers as well as members of the paper trade that newsprint would not hold up around 5 cents, and this undoubtedly accounts for the present policy of buyers in absorbing supplies very cautiously, mostly placing orders only for tonnage they know they will need with some relying more than usual on spot purchases to cover requirements.

The remainder of the paper market show no change of importance. There is no unusual activity existing in any corner of the trade. On the other hand, the prevailing dullness in many lines of paper is rather exceptional. Consumers exhibit a determination not to buy unless the need is imperative, and jobbers in turn are placing orders with mills only when having actual commitments to cover. Conditions at mill centres have not improved in point of activity. A large mojority of mills are running on short time schedule and some are adding to their stocks of finished paper even while operating on part time. Manufacturers in the Holyoke district have proposed a further reduction in wages of mill operatives, and have called a conference with union leaders to discuss the proposal during the next few days. This cut no doubt was prompted by the reduction put into effect by mills in the Kalamazoo district recently.

General opinion in the trade is that buying activity will expand before the end of August. There are many expectant of a return of good business toward the latter part of the coming month, it being felt that other manufacturing industries are reawakening and that the paper industry will shortly begin to share in the trade revival.

GROUND WOOD—No marked change has occurred in ground wood this week. The situation continues to be characterized by steadiness and there is unquestionably an upward tendency to prices. Continued dry and hot weather strengthens belief among those on the selling end of the trade that ground wood values are due for enhancement during the next few weeks, and although sellers are not as yet advancing quotations, they are becoming firmer and firmer in their demands for asked prices. Some of the foremost selling agents and producers in the country are refusing flatly to book orders involving ground wood for delivery further away than a month, owing to belief that within a month available stocks of mechanical pulp will be worth more money than today. Consumers appear to be quietly laying in supplies though it cannot be said that there is any concerted buying movement. Present transactions mostly concern small tonnage and cut no important figure in the market, though indications are that the average consumer is purchasing just a little more than he is now using.

Between $26 and $28 a ton at grinding mills is the range of quotations on prime ground wood for prompt shipment, with now and then a producer situated a far distance from the consuming point quoting a little less, down to $24 a ton having been mentioned. The delivered basis averages $35 to $36 a ton.

CHEMICAL PULP.—Sulphite of every grade is in slow demand and there is no feature to the market unless the easiness in prices, which has been a characteristic of the situation for quite some time, can be

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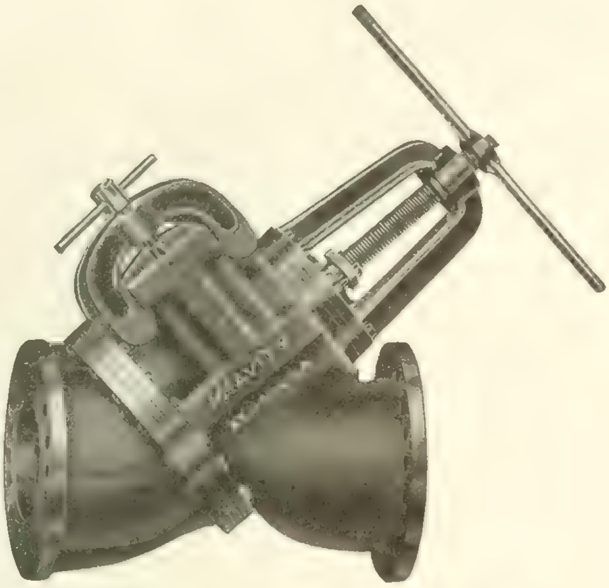

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called a feature. Paper manufacturers are buying strictly in hand-to-mouth fashion, and aggregate business is scarcely sufficient to establish definite market prices on any kind of chemical pulp. Domestic bleached sulphite is reported in some quarters offered down to 3.50 cents per pound, whereas the leading producers of No. 1 bleached are said to be demanding 4.50 cents and higher. News grade sulphite is reported readily available at 2.50 cents, while No. 1 domestic unbleached sulphite is said to be offering freely at 2.75 cents or at a trifle better. Kraft has eased off another peg or two, and both domestic and foreign kraft is now reported available at 2.50 cents per pound and less. Pressure on the part of the European producers to market pulp in the United States is still an important factor in the easiness of prices, and naturally discourages consumers from buying other than supplies they immediately need.

RAGS.—No expansion of trade activity can be reported in papermaking rags. Current demand is of very limited proportions and the little buying being engaged in by consumers hardly serves to make a market. It is extremely difficult to ascertain what actual prices are. Dealers in most cases are at a loss what to ask for rags or to say what can be realized on stock and prices as they exist today are largely a matter of the individual view of the holder of the goods as to what he considers the market to be. This much can be said, and that is that most mill buyers are succeeding in getting the rags wanted at close to their own prices, which means of course they are obtaining concessions. To do this, however, it is necessary that they shop about the market as a good many dealers are unwilling to sell at ruling prices in expectation that better values will be obtainable later on when demand assumes something approaching normal. Offerings by dealers are reported of new No. 1 white cuttings at 9 cents a pound at shipping points, of new unbleached muslins at 7.75 cents, of white lawn cuttings at 8 cents, of blue overall cuttings at 5.50 cents, of washables at 3.75 cents, of No. 1 old repacked whites at 4.75 cents, of repacked old thirds and blues at 1.60 cents, and of No. 1 roofing rags at 75 to 80 cents a hundred pounds.

PAPER STOCK.—Soft white shavings and white blank news cuttings and possibly one or two other grades of old paper hold fairly steady in price, due as much to the light accumulations in packers' hands as to present demand from consumers, but the general situation is paper stock is quiet and easy. Evidently the cardinal reason that prices on low grades do not go further downward is because prices already are at levels where they are afforded little on no opportunity to undergo additional recession. No. 1 mixed paper, for example, holds at around 22½ cents per hundred pounds, not because demand from mills is ample to sustain the market but because this price leaves packers virtually no profit in collecting and grading and baling the stock. No. 1 soft white shavings are quoted at an average of 2.15 cents a pound New York, and white news cuttings at about 1.40 cents.

OLD ROPE AND BAGGING.—One thing can be said in favor of old rope; this kind of papermaking material is holding its own in price under a fairly steady call from consuming quarters. Manila rope in No. 1 condition is bringing around 4 cents per pound at shipping points, with reports heard of sales in some cases at slightly higher than this price, and the market appears to be well sold up on this commodity.

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Without attaching undue importance to the date of a joint venture which had probably come about through personal relations uninfluenced by external events, it is worth while remarking on the legislative and economic landmarks of the early forties if only to emphasize the great changes in the conduct of trade which were then taking place. The foundation of the house thus coincided with a period of wide legislative reforms, among the chief of which were the liberation of trade from tariffs and shipping restrictions; an era highly favorable to commercial enterprise and in particular to the development of business with the Far East.

After 1900, however, Tea ceased to be the firm's sole interest. The days of plantation rubber had come and Harrisons & Crosfield were foremost in its development. They had established a branch in Colombo in 1895 under the name of Crosfield, Lampard & Co., of which the present Chairman, Mr. George Croll, was the first Manager. The development of the business overseas, together with the growth of the Rubber Industry and the responsibilities which it entailed, had made it essential to ensure greater continuity than a partnership could afford, and accordingly in May, 1908, the business was registered as a Limited Company with a capital of £307,500.

The progress made by the Company since its foundation in 1908 cannot be described in detail. As in the case of most growing concerns it has taken the form of a constant enlargement of the sphere of operations, with the devolution here and there of specialized branches of the business which can best be carried on by separate companies.

The interhouse trading by which each concern is in the position of being able to supply direct had led to an expanding business, especially in the Far East and Australasia, in Paper, Machinery, Hardware, Chemicals, Woodenware, Soft Goods, Groceries, quite apart from the raw materials which each centre requires. This policy of interchange of products of the various countries in which Harrisons & Crosfield Ltd. are represented, places their customers throughout the world in a position to secure their requirements of raw materials or manufactured goods in the best market.

The Export Department of the Montreal Branch has been active in fostering trade in Canadian manufactured articles with Australia, New Zealand and Far Eastern Countries. Special attention has been paid to those articles which Canada is economically suited to export, the intention being to develop only permanent foreign business. Considerable quantities of high grade bonds, ledgers, writing papers, also wrappings and bags, etc., have been marketed in overseas countries and there is every reason to expect a steady trade will be kept up.

An important feature of the Company's activities in recent years has been the development of Estate work and general trading in the Dutch East Indies, Japan, Borneo, and elsewhere.

The issued share capital of the Company has been increased several times since 1908, and now amounts to £1,844,986.

Pulp and Paper Magazine
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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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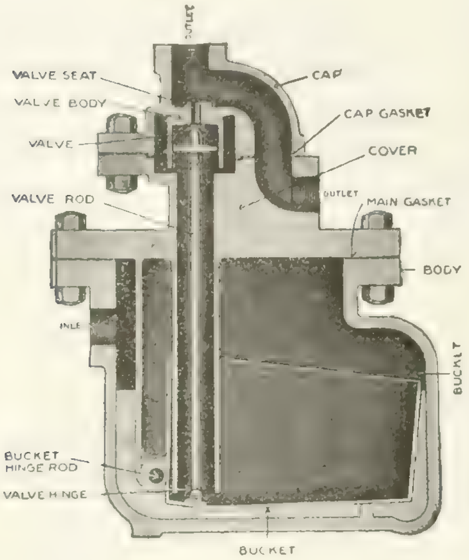

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Saskatoon
Calgary
Edmonton
Vancouver
Victoria

Fairbanks-Morse

EDITORIAL

CHRONIC OPTIMISM.

Early this week the annual report of one of Canada's largest pulp and paper companies, in fact, one of the most important newsprint producers on the continent was issued. The statement covers the year ending with June 30th and the figures are distinctly encouraging. The earnings and the profits are shown to be a very good percentage based on the investment in the properties and will no doubt lead some people, who would like to cast reflections on the industry, to say that these profits are exorbitant. Such critics will fail to realize that the year referred to included the period of peak prices and that this mill, like most others, have on hand considerable stocks or raw materials bought at high prices which will have to be converted into paper that can now be sold only at a very considerable reduction from the prices that ruled during the past year. It is true that a number of items of manufacturing cost have been materially reduced but such reductions have not kept pace with decreases in selling price. It will be remembered that when costs of materials began to climb, the newspint industry was prevented by law from stepping up its price in proportion and it was absolutely necessary for the stability of the industry that, during the period of unexampled business prosperity, prices should be charged which would enable the manufacturers to write off their high cost inventories so as to pass through the period of present business depression and enter the period of coming business activity at the reduced prices for all commodities which must rule during the next two or three years.

There is a great deal of promise for the future of the industry in the satisfactory margins that have been carried forward during the past year by the great majority of the Canadian Pulp and Paper Industry. Here and there a concern has not been particularly fortunate but so far there have been but one or two serious misfortunes.

The editor admits being a confirmed and chronic optimist on the future of the Canadian Pulp and Paper Industry, based on the firm belief that the managers of our mills are men of exceptional business capacity and on the conviction that in no industry is there a better general feeling of confidence and good will between the employer and the employee, a condition which is of the utmost importance to the stability of the industry and the earning power not only of the investor but also of the people employed. We have heard more than one manufacturer say that he believed in paying his men good wages and when his figures were compared with others employing the same class of labor it could be seen he meant what he said. On the other hand, in spite of difficulties that have not quite settled down between the union leaders and some paper manufacturers, we have no doubt but that the majority of paper makers realize the necessity, as well as the justice, of maintaining wages in proportion to the selling price of the product. It is unfortunate of course, that the selling price can not be always fixed in proportion to wages but, because the consumer has something to say in the matter, the price that he is willing to pay is what determines whether the goods can be sold and surely if goods cannot be sold wages cannot be paid. Fortunately, most consumers of paper are reasonable people and are willing to pay a price which permits the payment of reasonable wages.

The period is upon us when manufacturers will have to be satisfied with a smaller percentage of profit and with proper organization of their plants and the good will of their employees to co-operate in producing the maximum amount of saleable goods the turnover will be sufficiently large to make operation worth while. It must be remembered too, that the same argument which moves the employee to accept a lower wage should console the management and the investor in accepting a smaller return, namely, the dollar that he gets is worth more than it was a year ago.

Another factor which will figure largely during the next couple of years is the general improvement in plants that has been carried out by most of our mills recently. This has taken two general lines, one is the introduction of new machinery and the over-hauling and repair of the old and the second is the introduction of scientific investigation of problems and technical control of operations. This combination, if carried to its logical conclusion, with the proper encouragement from the management and support from the mill man, will shortly result in an economy and efficiency of operation that will enable the Canadian industry to compete with any pulp and paper producers in the world.

MORE FOREST FIRES.

For the last week end reports have come in from widely scattered areas that forest fires had again broken out and, in a number of cases, considerable damage has been done. In one case the statement was made that since it was only second growth that was burned over the loss was negligible. That is a direct contradiction to a statement we made last week that there is no such thing as a fire without a loss. It is just as such a loss for any trees, even if only one or two years old, yes, even if they are not yet trees at all but just seeds lying in the leaf mould waiting to be germinated by the warmth of the sun, to be destroyed by fire as it is a loss to the farmer if hail cuts down his grain crop before it is ready to harvest or to the fruit grower if the frost kills his blossoms or the wind blows them off. In either case the actual crop that he intended to harvest is not destroyed because it has not yet matured but the possibility of a crop has been swept away and this is just as true of the destruction of young forest trees and seeds as it is of the grain or the fruit.

Mention is made on another page of the fine work that is being done in Ontario by forest rangers in preventing fires from spreading. Probably even more important work has been done by them in preventing fires from starting. The granting or the withholding of permits for the burning of slash and the caution which comes with the knowledge of supervision and the fear of prosecution for breaking the law with respect to setting forest fires, have been wholesome influences in protecting our great natural resource. Greater stringency however must be exercised in the enforcement of the law and greater severity in sentences imposed before our forests are safe.

Communications from Provincial foresters assure us that newspaper reports are often very much exaggerated as to the extent of forest fires, and doubtless they are. The fact remains however, that the losses from forest fires are enormously greater than there is any reason for and the causes of the loss in nine cases out of ten are directly traceable to human carelessness. The protection of our forest is a primary duty of every citizen. They are not only necessary for the continuance of some of our basic industries which employ and support thousands of Canadian citizens but they are also great protectors of our water powers and are directly of enormous benefit to the agricultural industries of the Dominion.

COBWEBS.

We just read of a man whose jaws webbled when he talked. The trouble was that he had found a set of false teeth and the fit was not all that was to be desired, consequently he had difficulty in manipulating them. He was hopeful, however, even confident, that in time he would have them filed down to a good fit. Business seems to be in a somewhat similar condition at the present time. The current widespread depression is really a false or unnatural condition. The world has a mouthful of false teeth, so to speak, and is endeavoring to file them down to a fit. . The process is tedious and the general expression is a bit webbly but things are coming out all right and a little patience together with a good deal of courage and faith will result in a satisfactory fit.

The Association of Wood Using Industries in the United States is endeavoring to solve the problems involved in the standardization of sawn lumber. It is stated that one branch alone of the wood using industries wastes each year 600,000,000 feet of wood that could be cut into sizes required by other branches. The efforts of the association are directed along educational lines and their work is sure to result in great benefit, not only to the lumber industry but to the wood using industries as well.

The visiting members of the S. C. I. have a right to expect a cordial welcome and an interesting experience in Canada. The first requisite is a good attendance at the meetings, which begin August 29 in Montreal. No one feels at home in an empty house. A special feature of the programme is a whole session, the morning of August 30, to be devoted to the Pulp and Paper Industry. Our readers will find it distinctly worth their while to be there.

On another page will be found a picture of the safety shield which is offered for competition among the pulp and paper mills of Ontario.

Now is the time eo getbusy fer business.

We are all glad to have Mr. Beck back.

CANADA NOT IN IT.

We received a few days ago through the courtesy of our contemporary "Papyrus", a volume of 996 pages entitled Papyrus Annuaire de toutes les industries du papier. This is the most extensive directory that we have ever seen of publishers, merchants, agents, paper manufacturers, etc., and the publishers of this volume are to be congratulated on the extent of the ground covered. One finds information in considerable detail for Great Britain, Belgium, Switzerland and the United States, besides, of course, the very intimate description and directory of the industry and the associated industries in France, but we fail to find any mention whatever of Canada. We understand that the prominent Canadian papermaker who recently saw the publishers of this directory was assured that Canada would not be overlooked in the future. In spite of this rather serious omission, the directory is a very valuable one and should prove exceedingly useful to anyone having any idea of doing business with consumers of paper in the countries referred to.

SAFETY FIRST DINNER.

The members of the Safety First Department of the Belgian Industrial Company, Limited, were the hosts to about twenty Laurentide employees at a dinner at the Cascade Inn, Shawinigan Falls, a week ago Saturday night. The dinner was the result of a competition between the two paper mill departments to determine which would have the lower record of injuries and the Laurentide department won the wager. A pleasant time was had by all who attended and closer co-operation between the departments of the two concerns is the result.

The way to feel like doing our duty is to do our duty whether we feel like it or not.

Forestry in Britain

By EDWARD BECK, Publicity Dept., Canadian Pulp
and Paper Association.

Among the possible causes contributing to the unprecedented period of drought through which the British Isles are pasing is included that of the destruction of the forests which has resulted from the War.

"May it not be," asks a writer in the Daily Mail, "That we owe the drought from which we are suffering to the fact that most of our trees worth calling trees have been felled. It seems to be an established fact that local afforestation increases the rainfall of the district, and the denudation of the soil, owing to the destruction of forests, in India, is a fact equally well-established. Trees evaporate more water than even seas and lakes."

Be that as it may, after centuries of alternate care and neglect, ranging from fierce enactments by the Normans to preserve the forests as hunting places for royalty, down to the eighteenth century boom of forestry to provide timber for ship building, and its subsequent deflation when wooden ships became obsolete —Great Britain was never so deeply concerned nor so active as just now in forest promotion. The government is endeavouring by every possible means to restore the United Kingdom as nearly as possible to a self-suporting forestry basis. That this will take many years to accomplish if, indeed, it can be brought about at all, is apparently no deterrent. Britons are accustomed to a long look ahead. And, in any event, an active start has already been made to bring about the desired result.

The Forestry Commission of Great Britain, of which Lord Lovat is the head, and which was brought into being by an Act of Parliament passed in 1919, as a direct result of the enormous inroads made into Britain's standing timber during the war, has made much headway during its brief existence and now has an extensive forestry program well organized.

A preliminary grant of £3,500,000 was voted by Parliament for the purposes of the Commission. This sum is intended to cover a ten year period. The program to which it is to be applied includes the afforestation of of 150,000 acres of new land by direct action of the State; assistance to local authorities and private owners for the afforestation or re-afforestation of 110,000 additional acres; the purchase and reconstruction of hardwood areas; the education of forest officers, landowners and land agents, working foresters, and foremen; research and experiment, and the encouragement of forest industries.

The Commission has added to this program the work of obtaining a survey of the entire woodlands resources of Great Britain in which they have enlisted the assistance of private organizations and individuals and which is to be completed within three years. This survey which is estimated to cost £80,000 is expected to give essential facts and figures with a sufficient degree of accuracy as to enable Parliament to come to a decision as to the country's permanent forest policy, when, it is anticipated, a still more generous financial arrangement will be made for carrying on the work.

The Commissioners favor the continuance of the plan already adopted by Parliament in creating a "block" ten-year period for the purpose of financing the state forests. They are of the opinion, however, that the difficulties already encountered, and inherent to beginning work on a ten-year block grant, due to the slender basis on which to estimate and the unforseeable changes in prices and values, as well as the uncertainty as to the government's policy at the end of the period, make some change of the arrangement desirable.

"Forestry," they assert with truth, is obviously not a subject which can be taken up or dropped at will without serious loss of efficiency.

They suggest that, while adhering to the 10 year block grant system, Parliament should also systematically review progress at the middle of each recurring period and simultaneously make provision for a further 10-year program, which, in turn, would be reviewed and extended after an interval of five years.

The suggestion will appeal to all practical foresters wherever a state forestry policy is under consideration. Much of the lack of success of forestry policies and the cause of many of the difficulties encountered are traceable to haphazard or short-period legislation and to the failure at the outset to devise a permanent policy that will ensure continuity of effort and give to the practical foresters sufficient scope to make their efforts effective.

Pending the adoption of some such permanent policy by Parliament the British Forestry Commission is acquiring land by lease and purchase as fast as suitable areas are obtainable and bringing it under forest cultivation, as well as carrying on other sections of their program. The lands thus acquired are forest areas which were partly or wholly denuded to supply Britain with wood during the war, or grazing and other non-agricultural lands more suited for tree-growing than for other purposes.

Prior to the war the United Kingdom possessed about 3,000,000 acres of woodlands which yielded every year some 45,000,000 cubic feet of timber. It imported wood and wood products, including woodpulp to an amount equivalent to 550,000,000 cubic feet of standing timber. These imports, an inquiry disclosed, increased fivefold between 1850 and 1910. Consumption rose during the same period from 3½ to 11 cubic feet per capita of population. The ration of home to foreign timber had declined and in 1914 amounted to barely 10 per cent of the supply. The value of imported timber had risen steadily for the thirty years prior to the war while the quality had as steadily deteriorated.

The average annual imports for the five years preceding the war 1909-13, inclusive, amounted to 10,204,000 loads of wood and timber and 859,000 tons of woodpulp. In 1914 wood and timber imports declined by about 20 per cent., but the quality of woodpulp increased to 990,000 tons and did not decline below the pre-war level until 1916. Apart from this the reduction of imports which began in 1914 was continued at a slightly less rate in 1915, and at an increasing rate in 1916 and 1917, to reach bottom in 1918. In 1918 the total imports of wood and timber amounted to 2,479,000 loads or roughly 25 per cent of the prewar figure. It was in order to make up as much as possible of the heavy deficit in 1916-18 that the home woods were exploited to the utmost. On the other hand the recovery in imports had been even more rapid than the decline. Wood and timber were imported to the amount of 6,866,000 loads in 1919 and 7,418,000 in 1920. Woodpulp imports exceeded the pre war level in 1919 and increased in 1920 to 1,094,000 tons, which is the maximum yet recorded.

As regards prices, the reports show that there was a progressive rise in values as imports declined. The average price of all imports of unmanufactured timber during 1909-13 was £2.77 per load, in 1916, £6.4 per load and in 1918, £11.8 per load. The price fell to £10.5 in 1919, to rise to £11.08 in 1920. The rise in the price of pulpwood was from £4.7 per ton in 1909-13 to £10.7 per ton in 1916 and £30.4 in 1918. The total value of the wood imports in 1920, inclusive of wood manufactures, was £120,326,000 against £34,314,000 the average of the five years 1909-13.

"That the state of things was unsatisfactory in time of peace was generally admitted" the commission declares in reviewing its first year's operations. "It required but one year of war to show how critical the position was in a time of national emergency.

"In 1913 the quantities of timber and grain imported were about equal and headed the list of imports. They absorbed between them a quarter of the total shipping which entered British ports from overseas. In 1916 the people were hungry, yet, despite the most strenuous efforts to set more ships free from imported grain, it was found imposible to reduce by even one per cent the proportion of shipping required to carry the timber essential for operations of war abroad and at home. Napoleon's maxim that an army marches on its belly had to be brought up to date. The great war showed that the belly can only move on wood and iron of which wood is required in far greater bulk. Not till arrangements had been made for supplying the requirements of the army from the French forests and the home demand by ruthless felling of the old and young woods in the United Kingdom could tonnage be released for further imports of food."

In 1915 a committee was appointed to expedite home fellings and it soon became evident that owing to the depletion of home resources a national forest policy based on considerations of public safety was inevitable after the war. It was this realization that induced the step which subsequently led to the present efforts to restore permanent and adequate forests in Great Britain.

This policy, based on national insurance has, the Commission points out, as cogent arguments in its favor in time of peace as in time of war.

"The timber consumed in Great Britain and by the British Army in France between the years 1915-1920" says the Commission, "cost the country at least £190,000,000 more than a similar amount of wood would have cost at 1909-13 prices. In the year 1920 the Nation imported approximately one-tenth less wood and pulp than in 1914 and paid over £80,000,000 more for their purchase.

"There is no reason to suppose" it is added, "that the average annual demands for timber for house construction, delayed repairs and industrial developments will be less in the next decade than they were during the five years immediately preceding the war. If this is the case, and the price of timber does not fall much below a figure midway between the 1913 and 1920 prices, we shall have to pay for the whole of the period 1915-1920 anything between £400,000,000 and £600,000,000 more for our timber than we should have had to pay for a similar amount at 1909-13 prices.

"It is not argued that if the planting program now adopted had been completed before the war the price of timber would not have risen. It can, however, be definitely stated that had these additional woods been in existence they would have competed with Scandinavia and Finland and tended to keep prices of softwoods at a lower level."

Referring to the forest situation in Great Britain prior to 1919, the Commission sums up conditions as follows:—

"Those accustomed to the highly developed state of the Continent, with their regular succession of age classes and their ordered routine based on centuries of experience will have difficulty in realizing the conditions under which State forestry made its start in this country. Apart from the Crown woods the state forests in Great Britain in 1919 consisted of a few hundred acres of plantation recently acquired in Ireland.

"As a result of the absence of State forests there was no organized higher executive staff with British experience, no forest officer personnel, no body of foresters and foremen with State forest experience or customs, and, above all no forestry code. Surveys of plantable land were only beginning and little or no statistical information had been collected regarding privately owned woodlands. British forestry research was yet in its infancy. Admirable as has been the pioneer work it had seldom been directed to those particular points which were of importance to a forest authority initiating State Forestry "ab avo". It is true that experiments on a considerable scale had been undertaken by private individuals, but although in the mass they represented a body of information of real importance, the results had seldom been reduced to a form available for general application. In embarking on a policy of State forestry a start had therefore to be made, if not from the scratch, from a point very near it."

Taking these statements into account, it is interesting to discover through the first annual report of the Forest Commission just issued, that the Commission has made a more than satisfactory beginning. It is now in possession of 103,000 acres of land scattered throughout England, Ireland, Scotland and Wales of which 68,000 acres are classified as plantable. The area planted including that planted during the current season of 1920-21, covers 8,000 acres. Work is progressing by well-developed steps. The program contemplates an average annual expenditure of £400,000 to £420,000 a year; the acquisition of 260,000 acres of afforestation land by 1925 and the planting of 60,000 acres of the same; preparations for planting an additional 21,000 acres in 1926 and 24,000 acres in 1927. The Commission estimates that it will be obliged to purchase seed in 1926 sufficient to supply upwards of 70,000,000 seedlings for the planting season of 1929 as well as to acquire some 50,000 additional acres of land by that year.

The area planted in 1919-20 amounted to 1595 acres (since increased, as stated, to over 8,000 acres) of which 1474 acres were placed under coniferous plantation and 121 acres planted with broad leaved species. The number of plants used was 3,484,000, Scotch and Corsican pine accounted for 35 per cent of the plants while Norway and Sitka spruce provided 37 per cent. The Douglas fir, common to Western Canada, is highly esteemed here for its fast growing quality and general sturdiness and is being used on an increasingly large scale. European and Japanese larch, oak, ash, beech and other tree varieties are also cultivated.

Production statistics induce the Commission to believe that land capable of producing the faster-growing conifers under optimum conditions gives the best financial returns even where the cost of acquiring the site and establishing the crop is relatively high. First class Douglas fir land capable of growing up to 160 cubic feet per acre per annum will, the Commission states, given a market for pit-props, pay back the cost of planting in the course of the first 25 years. On the other hand, the poorer classes of Scotch pine land, especially at high altitudes, however, cheaply acquired and planted, only begin to pay back the original outlay after 40 to 50 years and at the time of final felling make but a low return on the capital invested.

The returns from afforested ground vary widely, the Commission finds. In the examination of some 1,100 plots and sub-plots in different parts of Great Britain and Ireland, it has been shown that returns run from 160 cubic feet per acre per annum in the case of first class Douglas fir land down to 40 cubic feet or less per acre per annum for poor Scotch pine land. In afforesting hill grazings whether at present used for deer, sheep or common grazings, it is found that the land varies from that suitable for the faster growing conifers on the lower slopes to land on the upper slopes which will produce 40 cubic feet per acre per annum. Taking a return of only 60 cubic feet per annum as an average return on the whole area and allowing 30 cubic feet of grown timber to the ton, it is figured that about two tons per acre per annum will result. Taking the gross value of timber at from 6 pence to 10 pence per cubic foot, the gross annual return works out at something between £1 10s. and £2 10s. per acre.

The figure generally accepted by the Commission for employment in forest land is one man to every 100 acres during the planting stage, one man to every 50 acres in the productive stage, and one man to every 25 acres when forest industries have been established round the forests.

Where necessary the Commission providing housing for its forester and forest laborers.

In respect to private and corporately owned woodlands, which the Commission under the Act is also bound to assist, the policy adopted and in effect is that of offering asistance to landowners and corporate bodies, during the initial ten-year period in re-afforesting at least 50,000 acres of old woodland as well as in planting 60,000 acres of new lands, at an estimated cost to the Forestry Fund of £327,000 of which £137,000 is allotted to proceeds—sharing schemes between private individuals of corporate bodies and the state, and the remainder to the bestowal of grants and loans. The grants contemplate paying £2 per acre as an inducement to private owners to replant felled areas and to extend the area of their operations.

For educational work the Commission contemplates an initial expenditure of £20,000 a year, it being expected that educational institutions participating in the grant will provide a similar amount on the pound for pound principle.

A personal visit paid to the Dean and Highmeadow forests and to the Tintern Woods, situated in Gloucestershire and Monmouthshire, and other State Forests found them in the hands of competent forest engineers who are making splendid progress in their efforts to bring these woodlands back into the highest degree of efficiency and economic returns. Practically no pulpwood is at present derived from the British forests, nor is it probable that such wood can be grown to commercial advantage in competition with Canada, Newfoundland, Scandinavia and Finland. At present the State forest yield wood for building purposes, pit props, telegraph poles and various industrial uses, and in some instances return a profit on their operations despite the numerous difficulties under which they temporarily labor.

A MARKET FOR PULP IN FRANCE.

The editor had the pleasure last week of a chat with that good friend of the paper industry Mr. S. J. B. Rolland, President of the Rolland Paper Co. Mr. Rolland with his wife and daughter, had just returned from and extensive trip through France, Belgium, Holland, the occupied area in Germany, and a stop in England. Mr. Rolland had not been in France since before the war and describes most vividly the situation there at the present time in contrast to other days. He says it is quite impossible however, to portray all of the conditions as one must really see to understand. Mr. Rolland spoke particularly of the courage and cheerfulness of the French peasants in the devastated areas who are again busily at work cultivating their fields and re-building the houses and towns that were completely destroyed

The paper industry in France is in a serious condition but not without hope of recovery. It is in the reestablishment of prosperous business conditions as respects the manufacture of paper that Mr. Rolland feels Canada has a particular interest as a source of woodpulp He feels that now is the time for Canada to send qualified representatives to establish themselves and Canadian pulp in the good graces of the French paper manufacturer. It is necessary for France to import a large proportion of the raw material for paper making and if aggressive selling measures are now undertaken, Canadian pulp mills should benefit by a good share of French business.

Mr. Rolland is not particularly sanguine of Canada's change to compete in Europe with local manufacturers of high grade papers. His opinion is based largely on the spirit of the people and their attitude towards work. Every day there is made to produce to the limit and with the exception of France and England, where the 8 hour day prevails, the rising and setting of the sun determine the length of a day's work. The great idea, particularly in Germany, is to turn raw material by means of manual labor and mechanical power, into saleable products which will bring in the money which must be secured. It will be difficult for other countries to compete with such an attitude and such a purpose unless, indeed, our own conception of work be radically changed.

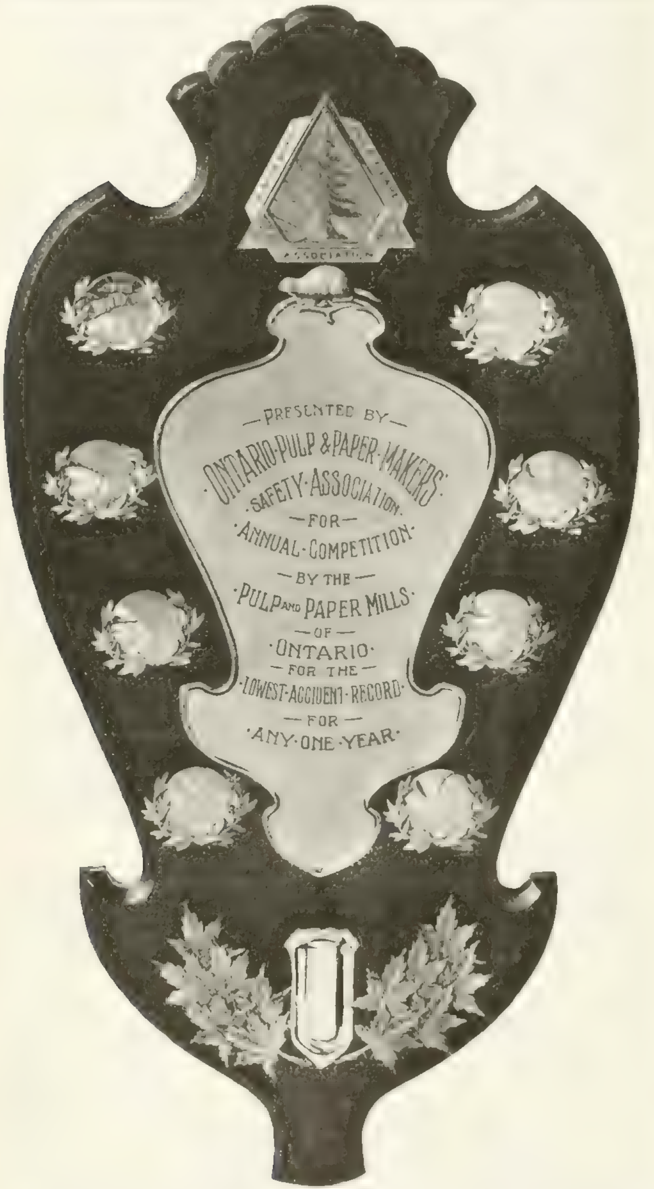
PULP COMPANY SECURES BUILDING PERMIT.

The Three Rivers Pulp and Paper Co., through its representative, the chief engineer, Mr. J. J. O'Sullivan, took out last week at Three Rivers, a construction permit for the erection of their factory which will be 540 feet x 100 and 70 feet, 2 stories high. Construction will be steel and concrete.

SAFETY COMPETITION UNDER WAY.

One of the biggest factors in the welfare of those engaged in the Pulp and Paper Industry though many of them do not realize it, is the Ontario Pulp and Paper Makers' Association. For a number of years this organization has been, with increasing energy, holding itself to the great work for which it was established, namely, to improve the conditions for the promotion of health and the prevention of accidents under which the manufacture of pulp and paper is conducted. It is really a misfortune that other provinces do not have similar organizations or, in fact, that there is not a Dominion wide organization of this kind.

The advantages of safety work, like many other good things, are often not fully realized, and certainly not fully utilized, unless they are continually brought to our attention. We even have to be invited to church and urged to go to school. Health is one of the cheapest as well as one of the most valuable benefits that we may enjoy and yet a moment's carelessness or lack of though will often wreck the happiness of a lifetime. To inspire and to develop habits of carefulness is one of the principal objects of the Safety Association. The executive all having been boys, realize the enthusiasm and influence of competition, and have happily hit on this means of encouraging safety work in the mills and they have further shown their appreciation of the helpful influence of team work and team loyalty. The result is a team competition among the mills of Ontario for a tangible prize, another very sensible feature of the competition. The prize shown in the picture, consists of a silver shield mounted on wood taken from a timber of original Don Valley Paper Mill, probably the first mill to operate in Ontario, and on which are also mounted the official trade mark of the Canadian Pulp and Paper Association and a number of medallions on which will be inscribed the name of the winner for each year. The mils have been divided into two groups according to size and a shield is provided for each group, thus making the competition much fairer than if a big mill were competing a small one. The mill in each group with the lowest accident rating for the current year will have possession of the shield until it is won by another mill and will have for exhibits a beautiful banner that will always be displayed not only as a permanent record of achievement but an inspiration to continued effort.



EDWARDS INTERESTS TO START NEW COMPANY.

Ottawa, Aug. 8.—An interesting announcement, and particularly so in view of the present Riordon situation, is that the W. C. and G. C. Edwards interests are to embark on a new line of manufacture in connection with which an incorporated company capitalized at $1,500,000 will shortly be announced.

The name of the new company is to be the Edwards Pulp and Paper Company and it is understood that it will be empowered also to deal in the manufacture of lumber as well as pulp and pulp products. The present wholesale lumber business known as the W. E. Edwards Company which is conducted at Ottawa, will be continued and will be carried on independently of the new company.

Since the sale of the Edwards lumber interests at Rockland and Ottawa to the Riordon Company Limited, the Edwards interests have not been manufacturing lumber, but have been engaged in the wholesale distribution of it. Recently, it is reported, the Edwards interests purchased limits, and it is stated that it is the intention to erect a saw-mill and manufacture lumber. Information as to the erection of a pulp mill or the manufacture of paper or pulp products is lacking, and opinion is that while the interests may become an incorporated company for this purpose, it is not likely that they will embark in the new enterprise at once.—Press Despatch.

It will be recalled that about two years ago, notice was published, in the Pulp & Paper Magazine, of the incorporation of an Edwards organization as a pulp and paper company with a capitalization of $4,000,000. That was before the Riordon merger.

COMPARISON OF OLD AND NEW U.S. TARIFFS.

Paper, Except Standard News Print.

Printing Paper, not especially provided for, 1 cent a pound and 10 per cent; Underwood, 12 per cent.

Paper Board and Pulp Board, 10 per cent; Underwood, 5 per cent.

Tissue, 5 to 6 cents a pound and 15 per cent; Underwood, 30 per cent.

Writing Paper, etc., 3 cents a pound and 15 per cent.; Underwood 25 per cent.

Books of all kinds, Bound or Unbound, 20 per cent; Underwood 15 per cent.

Manufactures of Paper, 2 per cent; Underwood, 25 per cent

A Unique Canadian Industry

By W. H. SHERRIFF.

During the past decade or two Canada has witnessed the rise and rapid growth of many new industries. By no means the least of these is the Kraft paper industry Kraft, the meaning of which was practically unknown ten years ago has during the past few years become a household word in Canada. It is a German Scandinavian or Swedish-German word which in English means "strong."

Kraft paper was first made at Munksjoe, in Sweden, by a Swede named Müntzing, who discovered what is known as the sulphate process of pulp making.

For many years the manufacture of this paper was confined to Swedish mills but it eventually reached Norway.

Originally this paper was imported into Canada in comparatively small quantities from Norway and Sweden but it is now made in Canada and has become one of the Dominion's leading industries, and Canadian mills are now able not only to produce sufficient for the requirements of the home market but also export a large portion of their output to British and Foreign markets whose requirements were previously supplied solely from Scandinavian sources. Kraft pulp and paper were first manufactured in Canada in the year 1908, and the honor for its introduction belongs to the Province of Quebec, the first Kraft mill being at East Angus.

Up to 1912 the production of Kraft in Canada was in its infancy but during that year the supply was greatly augmented by the opening of the well known mills of the Wayagamack Pulp and Paper Company at Three Rivers, P.Q., which are now the largest paper mills in the world, whose energies are devoted solely to the production of Kraft Pulp and Papers. Most other mills both in Canada and abroad produce several grades of paper but Wayagamack have from the first specialized in genuine Kraft.

At first this grade was looked upon simply as a wrapping paper and the word conveyed nothing to the lay mind, but today it serves not only as a wrapping paper of the highest quality but is used in the manufacture of many important articles.

The use of kraft in the manufacture of articles for which other raw materials were formerly used has increased to an extent that is nothing short of marvellous. For instance only a few years ago Kraft envelopes were a comparative novelty; today they are made and sold all over the world in hundreds of millions and give the same satisfaction as envelopes made from jute and cloth-lined papers costing three or four times the price.

The use of Kraft bags has also increased by leaps and bounds. They are used as containers for tea, coffee, sugar, fruits, candies, lime, cement, nails and hardware of every description. Even clothing is being made from this wonderful product of the Canadian forests and it is being used largely in the manufacture of workmens' overalls which, strange as it may seem, are both fire and waterproof. Kraft paper waxed or oiled is now the recognized wrapper for all food stuffs of a greasy nature and its use for this purpose increases daily.

Marketing bags, matting, wall papers, window blinds, awnings, chair seat coverings are other articles which are daily being made from this versatile product. Twines too are being manufactured from Kraft and even tents are being produced from this paper which has been found an excellent substitute for canvas owing to its ability to withstand rain. Most of these articles are made from strands or threads which have previously been spun or twisted from long strips of the paper about two inches in width. When the paper has been twisted it is so strong that it is impossible to tear it.

When this process has been completed the threads are similar to canvas. The material thus produced is then woven, the result being an attractive looking material used in the manufacture of many of the articles above mentioned. At an early stage during the war, Kraft became a necessity. It was used in the manufacture of explosives and many tons of Wayagamack Kraft were used by various munitions Boards in Canada and the United Kingdom in the preparation of rifle cartridges. A small wad of the paper was enclosed within the thin outer covering of nickle and took the place of lead. Millions of these bullets were fired at the Germans during the later stages of the war and some months elapsed before it was discovered that they were different from other bullets. Hundreds of thousands of sand bags also were made from Wayagamack Kraft for use by the British and Allied armies, these were used at the various battle fronts and also in England during air raids to protect historic buildings from damage by enemy aircraft. Thus Wayagamack may be said to have done "its bit", unconsciously perhaps, in assisting to win the war and helping "to make the world safe for democracy." The sand bags are made from the material previously woven from Kraft yarn and thus the necessary strength required to hold their contents and withstand adverse weather conditions is obtained. They can be produced at a much lower cost than jute sacks and are much more attractive in appearance, although I do not suppose the question of appearance was a matter of supreme importance to the troops in the field. But the latest and most ambitious use to which Kraft has been put is in the manufacture of what is called a corn or cereal cover. This unique article was invented by a gentleman farmer in the South of England and is used to cover wheat stooks and so protect them from the weather. The English climate is different from the Canadian; here the sun shines for weeks on and especially during the harvesting season and consequently wheat can be cut, threshed and stored before inclement weather is likely to set in.

Weather conditions in the old country are different, there is always an element of uncertainty as the farmer goes forth to gather in his crops. The sun may be shining brightly as he sets out but before his job is half finished the rain may begin to descend and it may continue for hours or perhaps days. Under such conditions it can easily be seen that the farmer and the nation stand to lose [illegible] and [illegible] a considerable amount of what under [illegible] advantageous conditions would be a valuable crop. To obviate this the corn cover was invented. It is made from a strong sheet of Wayagamack Kraft in the shape of a miniature roof capable of covering ten or a dozen sheaves-stooks. Their adjustment is simple. The cover is placed over the stooks and fixed by two farm hands in the following manner. Two lengths of cord, also made from Kraft, are fastened to each cover, after placing the cover in position each worker threads a long needle and passes it through the stook and so on till the end of the stook is reached. When this is completed the grain may be left standing in the field indefinitely, regardless of weather conditions. The paper not only protects the corn from falling rain but also absorbs any moisture that rises from the ground and consequently the loss of valuable grain by adverse weather conditions is reduced to a minimum..

There would appear to be no limit to the uses to which this remarkable product can be put, as the years roll on we shall perhaps have boots and shoes of paper and even paper houses, for even today the paper industry of Canada is in its early youth.

[The above article appeared, substantially in its present form, in the Toronto Globe of 6th July, 1921].

ELONGATION AND SHRINKAGE OF PAPER.

By A. Vander Stichel.

(Translated for the Pulp & Paper Magazine from La Papeterie, **42**, 270, March 25, 1920, by A.P.-C.)

For the manufacture of watermarked paper it is very useful to know the changes that take place in the sheet in process of formation. Such data are required for determining the proper spacing of the letters or designs on the dandy roll and also the diameter of the latter. It may be mentioned, by the way, that the clearest watermarks are obtained with a wet and relatively short stuff.

In the case of machine made paper the sheet behaves in an entirely different manner than in hand made: in the cross-direction there is a shrinkage, while in the machine-direction there is an elongation due to the tension to which the sheet is subjected. When the paper is under too great a tension, it loses strength and becomes weaker than hand made paper which is subjected to no tension.

A wire under normal tension stretches about 5 mm. per running meter. For our test we used a No. 70 wire, 14.82 m. long, so that during the test its actual length was

$$\frac{100.5 \times 14.82}{100} = 14.90 \text{ m.}$$

This figure was verified by measuring the wire while the machine was stopped. The width of the machine was 1.655 m.

The test was run on a printing paper weighing 60 g. per sq. m., made of chemical woodpulp and containing 33 per cent. loading. On measuring the finished sheet at the winder the length for one complete journey of the wire was found to be 16.10 m. and the untrimmed width 1.565 m.

This corresponds to an elongation of

$$\frac{16.10 - 14.90}{14.90} = 8\ \%$$

and to a shrinkage of

$$\frac{1.655 - 1.565}{1.655} = 5.44\ \%$$

These results are not applicable to all papers as they may vary considerably according to the nature and treatment of the furnish, the amount of loading, the thickness of the sheet, and especially the tension at the presses and driers.

A solution of the Riordon financial problem is expected this week as a result of the conference that have been going on during the past fortnight.

SPANISH RIVER EARNINGS UP.

Net earnings of the Spanish River Pulp & Paper Mills, Ltd, for the year ending June 30, 1921, amounted to $4,836,000, against $3,915,000 a year ago. After allowing $628,000 reserve for depreciation and $744,000 interest on funded debts, and other loans, the net surplus for the year stands at $3,463,000, compared with $2,552,000 for the previous year. Of this, $500,000 was appropriated for contingencies and Government taxes, leaving $2,963,000, to which is added the balance of the profit and loss account as at June 30, 1920, of $1,060,000, making the total of the income account $4,023,000. This sum was appropriated as follows: Dividends at 7 per cent. per annum on preferred stock, $603,000; dividends at the same rate on the common stock, $629,000; proportion of dividend paid to bondholders, $137,000; bond sinking to be carried forward $2,349,796.

This showing is highly pleasing because of the losses occasioned by a seven week's strike and the consequent shut down of the mills for about the same period prior to the end of June.

A further feature of the favorable position of this leader among the pulp and paper producers is the fact that the inventories have been written down to a figure representing present values and this is of particular interest to the company's stockholders in view of the wide-spread liquidation of substantial proportions that has taken place in inventories of all industries. In this connection it is pointed out in the report that shareholders may feel assured that the liquid assets have not been exaggerated in any way and that the large balance over current liabilities is not overstated.

A considerable amount, $3,321,465, has been added to the property account, representing capital expenditure to bring the mills into a producing capacity of newsprint alone amounting to 650 tons per day. It is understood that this amount includes the expenditure on the new machine at the Sturgeon Falls mills, which is now operating satisfactorily, although it was only started up a week ago. The development work at Smoky Falls, on the Sturgeon River, whereby the company obtains additional electrical power for the electric grinders at Sturgeon Falls mills, is also rapidly nearing completion and much of the cost has been included in the property account above referred to. It is interesting to note that notwithstanding the very large amount which has been expended on property account during the past year and for several years previous, amounting since 1917 to $8,500,000, the bonded indebtedness of the company is increased by less than $1,500,000 since that date.

The reserve shown in the balance sheet amount to over $5,000,000 without taking into account the balance at credit of profit and loss account at June 30, 1921, which is $2,349,000, after payments of dividends to all stockholders.

President George H. Mead, in his statement to the shareholders, points out that the operations of the company for the part twelve month, although carried on under conditions of exceptional difficulty, have been very satisfactory. From May 11 until June 30, the mills of the company as well as those of many other newsprint companies, were closed, pending the adjustment of a controversy with employees regarding the rates of wages. An arbitration agreement having been reached, the mills were re-started on July 4, and have since been in full operation.

WHY WE HAVE A COST SYSTEM.

By S. B. COPELAND, Vice-Pres. and Rest. Mgr.,
Eastern Mfg. Co., Bangor, Me.

In the management of an industry, such as that of the manufacture of fine paper, where the product goes through so many processes in its preparation and where there are many grades and varieties of product, we find a Cost Department not only a help toward intelligent management but an essential. Without the information which this department produces, long continued successful operation would be a matter of good luck rather than of judgment.

For determination of sales policies and making decisions upon manufacturing problems, the information contained in the following reports compiled by our Cost Dept., or based on statistics which are compiled there, are found invaluable.

A. Period Statement of Income, Assets and Liabilities.

As the records of the Cost Dept. are tied in the Commercial Books of the Company, statements of Gross Sales, Cost of Sales, and Net Income, and of Assets and Liabilities—which may be relied on—are gotten out for every four week period. Without controlled Cost Records, these figures cannot be safely used.

B. Estimated Costs of Paper, and Sales Reports.

Based on detailed records of manufacture and costs of materials and labor, estimates of costs of manufacturing the different grades, sizes and finishes of our product are turned over to the Sales Department and made use of in determining the prices should be obtained therefor.

Also, reports are gotten out showing for every four weeks our sales and the loss or gain from sales according to grades and finishes, by customers and by territories. These reports show which grades and finishes have proven profitable and should be pushed; the result of the business done with each of our customers period after period; and the general areas in which our sales are expanding or contracting.

C. Control of Manufacture.

For every four week period the cost of operating the Mill as a whole, and each department in it, in comparison with previous periods is reported to the Mill Superintendent and to other executives. These reports are made in detail so that fluctuation in costs of operation and the cause may be quickly ascertained. Costs of manufacture of steam and electric power are also reported in detailed comparative form so that these costs may be maintained as low as possible.

Performance of labor is shown up departmentally by comparative reports of the time taken for the different operations and standard times.

Efficiency of operation or the opposite is also shown up by weekly reports of Shrinkage and Broke, and by records of Broke made by grades.

Wastage may be detected by means of our reports of materials used showing the record of each period in comparison with previous periods.

We find reports such as outlined necessary for controlling all Mill Expense and maintaining efficiency and for preventing waste and loss of material.

D. Control of Inventories and Purchase of Materials.

Period reports are prepared to show the quantity and value of each inventory of raw material, materials in process of manufacture and finished product. These reports of materials on hand and of materials used assist the Purchasing Dept. greatly in preventing the tying up of too much money in inventories, and at the same time in showing up materials which may be run out.

These reports are also of value in Research Work.

E. Control of Cost of Repairs and New Construction.

By means of our cost records we are able to obtain reports of all expenditures for new construction and for repairs in totals and by single jobs.

When repair costs in any department are high, these reports show why; if repair men take too much time for a repair job the foreman of the department charged for the work generally complains about the charge, if no one else does, and the steps are taken to prevent a recurrence; if our indirect costs of doing repair work increase this also shows, and the amount of money tied up in construction in process is continually brought to the attention of those concerned.

The reports described above show in part why we find a Cost System an essential in conducting our business.

The expense of obtaining this information in comparison with the losses that could readily occur because of not having this information we feel is negligible.

INTERESTING DISPLAY OF FIBRE PRODUCTS.

The Diamond State Fibre Company of Canada, Limited will be represented at the Canadian National exhibition to be held in Toronto during the two weeks beginning August 27th. The exhibit will be in the Industrial Building and will be of particular interest to manufacturers of every line of merchandise.

The different grades of raw material will be shown as well as the finished product in the shape of noiseless water-proof gears, machined parts for electrical use, receptacles, automotive parts, etc. There will also be exhibits of articles in which Diamond Fibre has been utilized for machined parts in the place of wood, metal, rubber and other substances.

Representatives of the Company will be at hand every day to thoroughly explain Diamond Fibre and its uses to anybody interested.

Out-of-town customers are cordially invited to make the Diamond Fibre Booth their headquarters while in Toronto.

AMERICAN CHEMICAL SOCIETY FALL MEETING, CELLULOSE SECTION

The president and secretary of the American Chemical Society have authorized another meeting of the Cellulose Section in connection with the Fall meeting of the parent society in New York, September 6-10, 1921. Prof. Harold Hibbert has been reappointed chairman and Gustavus J. Esselen, Jr., secretary. This will be the fourth consecutive session devoted to cellulose and its derivatives, a symposium on the subject having been held in both St. Louis and Chicago and the first meeting of the Cellulose Section, as such, at Rochester last April. At this last meeting great interest was shown and there is no doubt that the Cellulose Section has made a place for itself in the activities of the American Chemical Society.

It is the plan this year to issue the preliminary program much earlier than on previous occasions and accordingly, those who plan to present papers before the Cellulose Section are urged to send the titles at once to the secretary of the section, 248 Boylston St., Boston, 17, Mass.

PULP AND PAPER NEWS

The large lumber mill at Great Salmon river, near St. John, New Brunswick, which belongs to the Pejepscot Pulp and Paper Company, of Bath, Maine, U.S.A., was closed down last Saturday, for the remainder of the season. This has thrown some 200 employees out of work.

The compositors' strike in Toronto seems as far as ever from any approach to a settlement. But there seem some evidences of an increased acerbity being imported into the conflict. The Rev. E. S. Thomas, a local minister, has written a long letter to one of the Toronto papers in which he sternly deprecates the methods adopted by the employing printers, and hints that the ban on shops conceding the forty-four hour week may be a matter for the intervention of the Crown Attorney. Last week, too, Mr. James Simpson, the well-known Socialist, who is espousing the cause of the striking printers with great ardor, tried to get the Toronto Trades and Labor Council to pass a motion condemnatoy of Magistate Ellis, of this city, relative to certain expressions of the magistrate in question on the occasion of the trial of a compositor charged with stealing. He also wanted the Council to bring the affair of the magistrate to the attention of the Attorney General, claiming that his attitude was prejudicial to the interests of the striking printers at the present time. However, when Mr. Simpson had finished his remarks, it was found that the exit of a number of members had left the meeting without a quorum. This leaving before the motion could be put looks as though all the members of the Toronto Trades and Labor Council have not the cause of the striking compositors as closely at heart as Mr. Simpson, or else that they do not share his view as to the magistrate's attitude having been detrimental to their interests. One remembers, too, that when, a few weeks ago, an appeal from the Toronto Bookbinders' Union for financial aid was made to this same Toronto Trades and Labor Council, very pointed objection to granting such aid was made by several of the members, and the appeal was ultimately turned down on the ground that no funds for the purpose named were available.

It is worthy of mention, by the way, that at the meeting of the Toronto Trades and Labor Council last week, Mr. Simpson, the delegate responsible for the abortive motion mentioned above, stated that he was informed that the Toronto Transportation Commission was having its new street car tickets—for the street car service is to be taken over by the city from the Toronto Street Railway Company at the close of this month—printed in the Montreal Gazette office.

The present force of fire rangers in the employ of the Ontario Government numbers 1,000 and the territory over which their services range is no less than 100,000,000 acres in extent. The cost of this force to the Province is $3,000 a day. Owing largely to the vigilance of these rangers, two thirds of the forest fires of Ontario in the last four years did not spread beyond five acres, and, of these, half did not exceed one quarter of an acre. Nevertheless, appalling damage is done by fire to vast forest areas every year. Aircraft have lately done yeoman service in the Province in the way of speedy location, resulting in the early extinction of forest fires. The service they have rendered has not passed unnoticed at Ottawa, and it is to be hoped that both Federal and Provincial Governments will speedily realize, that as a means of fire protection, aircraft, for their special purposes, are quite unequalled, and that the extension and development of an air service for such purposes is a responsibility which they—and particularly the Provincial Government—may fairly be called on to undertake.

For some time, Hon. Howard Ferguson, the Conservative leader in the Ontario Legislature, has been making very vehement attacks on the Drury Government in connection with the much-discussed Backus deal. The other day, Premier Drury came back at him in what looks like a very effective manner. Mr. Ferguson had talked of Mr. Backus obtaining from the public domain at his own figure "a vast empire of forest wealth." Premier Drury, if his figure be correct, showed that Mr. Ferguson had greatly exaggerated the contents of this "vast empire." He went back also to the history of the former Government's dealings with Mr. Backus, and declared that Mr. Ferguson himself had asked dues of only $.40 and $.20 for spruce and poplar respectively, whereas the Drury Government is asking dues of $.80 and $.40. Mr. Drury indignantly repudiated the suggestion that he and his Government "would ally ourselves with a wealthy American who has brought on himself, justly or unjustly, a press campaign, when we have already, by fighting dishonest timber transactions, brought on ourselves the enmity of powerful interests."

Plans for the reopening of the Kaministiqua Pulp and Paper Company's mill, at Port Arthur, Ont., are, it is announced, following a directors' meeting last week, under consideration. The announcement states that the pulp market shows signs of improvement, that the Company owns two valuable timber licenses, and that, in view of the favorable situation of the mill, giving cheap transportation and easy access to a large supply of pulpwood, the prospects of the Company are considered bright. The plant at Port Arthur, it may be mentioned, which is at present closed down, was built to manufacture groundwood pulp, with a capacity of 7,000 tons a year. It was the intention to extend this into a pulp and paper mill, with a daily capacity of 250 tons of newsprint. But no sooner had the pulp plant got nicely started than the slump arrived. Organized in a sky-high market, and almost immediately confronted by a collapsing market, the Company defaulted in payment of the bond interest due on the 1st July.

The Provincial "Health Train" visited Grand'Mere this week and the staff received a cordial welcome. Another step, where great interest was shown was at Shawinigan Falls. The exhibits, lectures, and conferences will have a good effect on the sanitation and health in Quebec.

Mr. F. G. Warburton of the Harland Engineering Co. and Mr. W. Adamson, of Charles Walmsley & Co. are sailing Saturday from Quebec for England, after an extensive, and, they say, enjoyable visit on this side. Mr. Norris is staying in Canada to complete some efficiency tests and other work in connection with the several Harland Patent Inter-lock paper machines drives now operating in Canada. A full report of this interesting work is promised in the near future.

Mr. J. O. Mason, of the Laurentide Co. has recently moved into his new house at Grand'Mere. There was a small fire in a pile of waste lumber during its construction. Last week the water heater in the basement blew up, but did little damage besides knocking down a few pictures and scaring the maids.

In a note which appeared in this column a couple of weeks ago, relative to the very interesting address recently delivered by Mr. C. V. Syrett before the Toronto Kiwanis Club, it is possible that a slightly erroneous idea was conveyed as to where he placed the emphasis (so to speak) of his address. It dealt with the growth of the paper industry in Canada and he laid great stress on the importance of Canada's forests and the keen interest that was now being given to reforestation. Then he traced the paper industry from its earliest stage up to the present giving statistics to show the growth. He then mentioned some of the more difficult lines of manufacture and dwelt on the demands for paper in specialty lines such as Paper Towels, Drinking Cups, Paper Cartons, that years ago would be considered impossible, and foolish. He wound up by giving a timely word for a more serious interest in Inter-Empire Trade.

Mr. A. E. Bryan, Canadian Trade Commissioner in Yokohama, reports that it is difficult at present to interest either foreign houses or Japanese in many Canadian lines. There appear to be good stocks of all imported materials on hand, and importers do not wish to place new business until present supplies have been almost exhausted. But many inquiries for Canadian lumber have been received. For the first few months of this year there have been heavy decreases noted in every raw material imported into Japan with the exception of lumber. There is also some market for wood-pulp, because, although there are big stocks of pulp in Japan at present, owing to the fact that Japanese mills are operating at only 80 per cent. capacity capacity, many firms look to Canada as the future source of supply and want to make connections with which they can do business just as soon as there is demand.

BEAUTIFULLY EXPRESSED.

It would be hard to find a more beautiful expression of the sacred feeling of bereavement than the words of the resolution passed by the American Paper and Pulp Association regarding the death of Angus Cameron, Winthrop Murray Crane, Elbert H. Geddes, Garrett P. Hynson, James C. Kerwin, H. C. Peters. Arthur F. Robertson, K. C. Sweet, J. P. Sill, George C. Sherman.

"The leaves from the tree of life, detached one by one, whirl with the early storms or in their full splendor drift slowly down in the autumn of life. Since we last gathered here, the unending procession has taken up many who were dear to some of us, who made our industry better for their contact with it, who have left the sweet fragrance of pleasant memories with their passing. Our sorrow is lessened with the knowledge of their greater happiness.

"As old friends gathered about the fire in the evening, we speak of them as part of our circle, absent on a long journey."

FILLING A PULP STONE CAVITY.

By W. A. MUNRO.

A pulp stone that has developed a cavity due to a sand pocket or other imperfection in the texture of the stone, a condition that was not apparent before the stone was placed in operation in the grinder room is a cause of considerable loss due to the expense not only of the labor cost but also of the lost time in removing this stone and replacing it with one that has the outward appearance of perfection. It has been known to happen that the new stone shortly after developed the bad traits of its predecessor.

An easy and permanent way has been found to fill these cavities and to make the stone's cutting surface as good as that of a perfect stone. This operation, the cost of which is negligible, saves the expense and time lost incidental to replacing the imperfect stone. This filling will last as long as the stone is of use, wearing down at the same rate as the rest of the stone.

The work of filling this cavity follows almost the same procedure a dentist does in filling a tooth. First the hole is cleaned out. The sand is dug out and the cavity is deepened and made wider. It should be at least four inches deep, an inch or two deeper will do no harm and will ensure a more permanent set to the filling. The hole should be made wider at the bottom than at the top and the sides corrugated to give the filling a better hold.

The composition of the filling is the most important part of the whole operation. The cement used should be new and of the best quality. This cement is mixed with an old pulp stone that has been broken up. About 33 per cent of this broken up stone should consist of small particles not larger than one eighth of an inch in diameter. These particles give the stone its cutting ability and if they are not used, the repaired spot will glaze over causing the stone to run very hot even when sharp and it will also diminish the production from the stone.

The cement and fine stone is mixed exactly half and half, and enough water added to make a thick paste. This is put in the cavity and tamped in. All cracks and hollows in the bottom of the stone should be well filled. This fine filling should be put in only up to the point where there will be no cutting action of the stone when the stone has been worn down. From this point the filling should consist of fifty per cent cement, twenty-five per cent of fine sand or binding particles, and twenty-five per cent of coarser sand or cutting particles. This should be pounded in with a soft wood stick not as solidly as the bottom filling but enough to insure the complete filling of all the upper parts of the cavity. The filling of the cavity should be about one-quarter of an inch higher than the face of the stone, so that when the filling sets, it will not shrink below the circumference of the stone.

The mixture should set twenty-four hours to become thoroughly hardened. The rough outer surface may be smoothed off by using a coarse diamond burr and cutting the projecting surface down gradually, as too violent action of the dressing burr may render the whole job of no value.

This filling will be darker than the original stone and harder. It wears down however at the same rate and takes a burr pattern well. The production is not lessened and no difference can be observed in the quality of the pulp produced.

Technical Section

REVIEW OF RECENT LITERATURE.

A-10. New Process of Drying China Clay. China Clay Review, xi, 23. It is averred that a system invented by a Norwegian for the drying of peat could be applied to a China clay. When this invention is finally perfected a great seving of labor ond operating costs may be effected. A.C.

B-2. Choice of Species for Use in Plantations of Pulp and Paper Companies in the North. H. B. SHEPARD, **J. For.**, May 1921, p. 519. Discusses in detail the relative merits and disadvantages of the several pulpwood species for planting in the northeastern States. This discussion is adaptable also to large areas in eastern Canada. Of the four species of spruce, black, white, red and Norway, the first is eliminated because of its slow growth and poor adaptability to all except special sites. Red spruce is not considered desirable because of its slow growth, its susceptibility to the bud-worm, and because it does not admit of so economical seed collection. Norway spruce is an exotic species and little is known of its real possibilities on this continent. So far as its establishment and early growth in the plantation are concerned, it is inferior to white spruce. Its suitability for pulpwood alone has been thoroughly demonstrated in Europe, but little is known of its rate of growth on this continent, its resistance to enemies and the quality and origin of its seed supply. Some question has been raised with regard to the cooking properties of white spruce but the opinion is expressed that when this species forms the bulk of the pulpwood coming to any one mill, the cook will surely be adapted to it and satisfactory pulp will be produced. Thoroughly satisfactory results are, as a matter of fact, already being secured in the manufacture of sulphite pulp from white spruce at many plants. This species is regarded as the most satisfactory of the four for planting purposes. -C. L.

B-2. Growth and its Relation to Thinning. C. H. GUISE. **J. For.**, May, 1921, p. 546. Discusses briefly the permanent sample plot work of the forestry department of the New York State College of Agriculture at Cornwall University.- C.L.

B-2. Reforestation on Shifting Sand. A. H. RICHARDSON. **Can. For. Mag.**, Dec., 1920, p. 566. Describes the planting work of the Ontario Forestry Branch. C.L.

B-2. How Tree Seed is Gathered. A. H. RICHARDSON, **Can. For. Mag.**, Jan., 1921, p. 30.—C.L.

B-2. How France Sustains her Forests. Can. For. Mag., Feb., 1921, p. 105.—C.L.

B-2. Evergreen Growing on the Prairie. M. J. STEVENSON, **Can. For. Mag.**, March, 1921, p. 146.—C.L.

B-2. Great Results from Jack Pine Planting. M. J. STEVENSON,**Can. For. Mag.**, April, 1921, p. 212.—C.L.

B-2. Importing Tree Seeds. OTTO SCHIERBECK, **Can. For. Mag.**, April, 1921, p. 213. Advocates the home collection of tree seeds and the discontinuance of the former heavy importations of such seeds from Germany and other European countries. Much of the seed so imported in the past has not given satisfactory results.—C.L.

B-2. Second Growth Hardwoods in the Adirondacks. A. B. RECKNAGEL, **J. For.**, Feb., 1921, p. 129. Clear cutting in the hardwood type results in even-aged stands of beech, birch and maple, and in a more rapid growth in diameter, height and volume. Growth tables are presented which point to a productive possibility in our second growth hardwoods which is distinctly encouraging.—C.L.

B-2. Forest Planting in Southern Michigan. L. J. YOUNG, **J. For.**, Feb., 1921, p. 131.—Discusses the planting done by the Forestry Department of the University of Michigan in the Vicinity of Ann Arbor, and gives table showing the growth of the numerous species which comprise the plantations.—C.L.

B-2. Some Instances of Sand Dune Planting. C. R. TILLOTSON, **J. For.**, Feb., 1921, p. 139. Describes sand dune planting at Cape Cod, Mass., and near Harlem, Mich.—C.L.

B-3. How New Brunswick Guards Forests. Can. For. Mag., Nov., 1920, p. 507—C.L.

B-3. Quebec's Way of Protecting Forests from Fire. B. N. O.HARA. **Can. For. Mag.**, Dec., 1920, p. 569. —C.L.

B-3. Improvements in Railway Fire Protection. WILLIAM KILBY, **Can. For. Mag.**, Dec., 1920, p. 595. C.L.

B-3. Why the Prairies are Treeless. R. H. CAMPBELL, **Can. For. Mag.**, Jan. 1921, p. 5. The chief onus of blame is laid at the door of fire.—C.L.

B-3. Bark Beetle Combated. Dr. J. M. SWAINE, **Can. For. Mag.**, March, 1921, p. 168. Describes the work of the Dominion Entomological Branch in cooperation with the British Columbia Forest Branch and private timber owners in combating the outbreak of the bark beetle in western yellow pine stands in the Similkameen and Nicola districts, southern British Columbia.—C.L.

B-3. Sky Patrol for Fire Protection. LUTHER K. BELL, **Can. For. Mag.**, April, 1921, p. 226. Describes the use of aircraft in forest protection, in the United States.—C.L.

B-4; E-3. The Pulping of Jack Pine. Can. For. Mag., Nov., 1920, p. 508. Describes the experiments of the Wayagamack Pulp and Paper Company in the manufacture of groundwood pulp from jack pine. The tests made by the company and a report made by Arthur D. Little, Inc., show that jack pine is quite suitable for both groundwood and sulphite pulp. When cooked alone the sulphite from jack pine is quite equal in all respects to spruce pulp. The amount of resin is not excessive.—C.L.

B-4. Wood and its Distillation. A. G. MACINTYRE, **Can. For. Mag.**, Jan., 1921, p. 9. See also articles by the same author at page 92 of the February issue, page 162 of the March issue, and page 232 of the April issue. C.L.

B-4. Standardization of Lumber Sizes and Grades. DAVID G. WHITE, **J. For.**, Jan., 1921, p. 36. See also "The Development of a Brush-Disposal Policy for the

Yellow Pine Forests of the Southwest,'' by T. S. WOOLSEY, jr., at page 39 of the same issue. C.L.

B-5. Notes on Slash Disposal in the Lake States. J. A. MITCHELL, **J. For.**, Feb., 1921, p. 141. A very valuable discussion on the many considerations which enter into the slash disposal problem, with special reference to conditions in Wisconsin and Minnesota. Where properly handled, slash disposal results in a great decrease in the fire hazard, and the work can be handled at a cost which is not prohibitive. The article concludes that three things have been demonstrated, namely:

(1) That in the Lake States at least, a compulsory slash disposal is not only necessary and desirable but practicable;

(2) That its administration, however, must be flexible, as no hard and fast rule can be laid down; and

(3) That adequate funds and a trained personnel must be provided for its enforcement.—C.L.

B-6. An Aerial Survey of the Forests in Northern Ontario. R. D. CRAIG, **Can. For. Mag.**, Nov., 1920, p. 516.—C.L.

B-7. Hitching Science to Forest Management. ELLWOOD WILSON, **Can. For. Mag.**, Dec., 1920, p. 581. Argues for improved and modern methods in logging operations comparable to the improvements which have been made in the mill. The sustained yield basis for timberlands must be adopted instead of mining our forests. A selection system of cutting is indicated. The tendency is toward the adoption of more machinery in connection with logging in the east. Discusses diameter limit regulation and forest planting.—C.L.

B-7. How Sweden Handles her Forests. HELGE GRAESLUND, **Can. For. Mag.**, Jan., 1921, p. 35.—C.L.

B-7. Relation of Foresters to the Logging Department. B. F. AVERY, **Can. For. Mag.**, March, 1921, p. 152. An interesting and valuable discussion presented by the forester for the Spanish River Pulp and Paper Mills at the annual meeting of the Canadian Society of Forest Engineers held at Montreal in January. "By mutual consideration for the problems of the other man; by constant personal contact between the members of the logging department and the forester, there will exist a relationship that cannot fail to bring progress in woods management and to hasten the fulfillment of the aim of the profession of forestry."—C.L.

B-7. Management of Pulp Lands in Eastern Canada. E. F. McCARTHY, **Can. For. Mag.**, March 1921, p. 158. A valuable article in which is discussed the conservative handling of the several types of forest to be found in eastern Canada. Emphasizes the potential value of cut-over pulpwood lands and advocates adequate protection and careful management of such lands with a view to a future crop. This paper was presented at the annual meeting of the Canadian Society of Forest Engineers.—C.L.

B-7. Some Observations on Empirical Forestry in the Adirondacks. H. C. BELYEA, **J. For.**, Feb., 1921, p. 115. Discusses the several forest types, influence of logging on the forest, cutting of softwood to a diameter limit, cutting of all merchantable softwood, and clear-cutting hardwoods and softwoods and planting on cut-over lands. Spruce swamp areas lend themselves naturally to clear-cutting methods with natural reproduction. A modified selection system on a conservative basis is recommended for the spruce or balsam flat areas. Hardwood areas must be opened up to such an extent as will induce accelerated growth on the smaller sized trees remaining, after the cutting, without subjecting them to death through exposure. A secondary removal cutting in the second-growth is also indicated for the purpose of obviating subsequent stagnation from over-topping, fast-growing, widespreading hardwood crowns. The upper slope forests should be managed on the basis of the protective forest only. Planting on burned-over areas should be undertaken before the native growth of weeds, ferns, and brush offers such competition to the planted stock as will induce very early stagnation and probable extinction. Planting on cut-over lands gives little promise of success unless the area is given a preparatory treatment by burning for the purpose of clearing the site of native seedling and sprout growth. Even then a secondary silvicultural treatment will be necessary in order to remove competing fast-growing hardwoods subsequently seeded into the area.—C.L.

B-9. What's in Labrador? Dr. W. T. GRENFELL. **Can. For. Mag.**, Nov., 1920, p. 499. A brief discussion of the forest resources of Labrador.—C.L.

B-9. Premier Drury on Ontario's Policy. Can. For. Mag., Jan., 1921, p. 21. C.L.

B-9. The Land We Live In. ROBSON BLACK, **Can. For. Mag.**, Jan., 1921, p. 23. A review of the Dominion's timber wealth, and the progress towards forestry methods.—C.L.

B-9. Where do we Stand in Timber? W. C. EDWARDS, **Can. For. Mag.**, Dec., 1920, p. 536. Prophesies that within fifteen years eastern Canada will be drawing the bulk of its sawn lumber from British Columbia and will be paying for it through the nose on account of high freight rates. The consumer, not the lumberman or the limit holder, is the man who will pay the price of forest exhaustion. The cutting of timber limits has been much more rapid than any new growth could offset, and over and above the waste of the limit through injudicious cutting, forest fires have been permitted to strip thousands of square miles of our most valuable timber. The only remedy for timber land depletion is to gauge the cut by the ability of that particular area to sustain production. Only the mature and diseased timber should be cut.—C.L

B-9. Embargo on Pulpwood Export Proposed. F. J. D. BARNJUM, **Can. For. Mag.**, March, 1921, p. 155. A further discussion of the proposal that restriction should be placed upon the export of pulpwood cut from privately-owned lands.—C.L.

B-9. Timber Areas of the World Outside Canada. Can. For. Mag., March, 1921, p. 171. A brief discussion of the forest resources of some of the tropical and semi tropical countries.

B-9. Meagre Forest Resources Bordering James and Hudson Bays. FRITZ JOHANSEN, Geological Survey, **Can. For. Mag.**, April, 1921, p. 201.—C.L.

B-9. Can. B. C. Forests Stand Coming Strain? R. W HIBBERSON,**Can. For. Mag.**, April, 1921, p. 215. Discusses the enormous amount of waste in British Columbia logging and the general economic situation which will result in a continually increasing demand upon the forests of British Columbia.—C.L.

B-9. The Economic Significance of Forestry. GIFFORD PINCHOT, **Can. For. Mag.**, April, 1921, p. 220. See also article in the issue for March.—C.L.

B-9. Connecticut's Forest Program. T. S. WOOLSEY, jr., **J. For.**, Feb., 1921, p. 147.—C.L.

HALF YEAR'S TRADE OF BRITISH PAPER MILLS.

(Special From Our London Correspondent

A six months statement, ending 30th June last, has been issued by the Imperial Board of Trade and it shows the great effect the coal miners strike and other disturbing elements have had on the trade of the British mills, as well as shipments of pulp to the United Kingdom. One notable feature of the export trade is the significant difference on the declared values of paper and cardboard when the first half of the year 1921 is compared with 1920. If the figures are correct and we must assume they are everything points to the fact that the prices of British paper and board mill products have been on a higher level during the past six months than they were for the corresponding period last year.

One inference to be drawn from this statement is that the British exporter shipped less paper and board during the last half year and got more money from his products than he did in 1920, when prices were higher. The explanation may be that pulps used in the manufactures and labor costs inflated the values.

Fall in Canadian Shipments.

Newsprint was exported to the extent of 1,196,756 cwts. from all sources at a value of £2,427,709 compared with 1,243,480 cwts. at £2,766,987 in the first half of 1920. The countries of supply were: From Sweden, 243,253 cwts. (220,819 in 1920); Norway, 89,614 cwts. (343,659 cwts.); Germany, 36,616 cwts. (41,910 cwts.); Belgium 39,518 cwts. (6,160 cwts.); U. S. A., 1,610 cwts. (41,531 cwts.); Canada, 5,183 cwts. (102,882 cwts.); Newfoundland, 247,430 cwts. (100,945 cwts.); other countries, 530,522 cwts. (385,574 cwts.). These figures for 1921 and 1920 show a material falling off in newsprint from Canada, U. S. A., and Norway, while increased trade is shown with Belgium and Finland, the latter being the principal source in "Other Countries". Newfoundland, it will be observed, occupies a conspicuous place in the list of supplying countries, due in a large measure to studying the market.

Packing, Wrapping, and Tissue Paper was imported to the extent of 480,539 cwts., valued at £1,336,852, compared with 2,382,595 cwts. at £6,398,701 in 1920 and 2,011,222 cwts. at £1,386,791 in 1913. Canada shipped 10,381 cwts. The depression in trade and strikes in the United Kingdom have hit sellers of packing and wrapping paper very hard and there are large stocks in the country. Canadian shipments, though small in comparison to the 1920 figures, are, however, considerably above pre-war supplies.

Canada enjoys a good trade with the United Kingdom in millboards. Strawboard mills in the Dominion will also be interested to know that the British market imported 650,656 cwts., valued at £543,783 during the past half year, compared with 2,116,977 cwts. at £1,935,790 in 1920 and 1,783,923 cwts. at £490,673 in 1913.

Exports of British Mills.

Australia is a good customer of the British mills for newsprint and other printing papers. Next comes New Zealand, India, and South Africa. But while the shipments, 400,965 cwts., valued at £1,676,800, were above those of 1920, the trade has not yet reached the pre-war stage, which, for the first half of 1913 was 1,000,380 cwts. valued at £953,423. The figures for 1920 are 374,213 cwts. valued at £953,423. The figures for 1920 are 374,213 cwts. valued at £1,417,913. A comparison of the quantities and values is interesting for the three years quoted. Canada imported (fine printing paper) 1,554 cwts. during the last six months, valued at £8,810, compared with 1,015 cwts. at £5,280 in 1920 and 67,942 cwts. at £82,829 in 1913.

Increased shipments of writing paper were sent to South Africa, Straits Settlements, Australia, New Zealand and Canada. Canada within the half year imported 672 cwts., valued at £5,127, and 76 cwts. at £902 in 1920. The supplies to Canada are only one-fifth off the pre-war trade and to France about one-fourth.

Canada also imported other manufactures of paper, not specified, to the extent of 1,070 cwts. at £5,170 in 1920. Under this heading there is an increase on pre-war trading. It means 500 tons of paper of some sort going into the Dominions which is not specified on this side of the Atlantic and it behoves the C. P. and P. A. to keep an eye on such imports. Throughout this return on trade I have quoted values for the information of mill owners and pre-war and post-war figures are well worth comparing.

Pulp Imports Big Decline.

Out of a total of 111,222 tons (217,865 tons valued at £2,781,722 in 1920) of groundwood, (moist), valued at £1,375,071, received during the half year, Canada shipped 21,217 tons, valued at £292,355; Norway 89,222 tons (a reduction of 86,449 tons when compared with 1920) at £1,071,253; and Sweden 444 tons (a reduction of 28,323 tons) valued at £6,831. A notable feature in the falling-off in Swedish supplies, which in 1913, during the first half, amounted to 42,095 tons, as against 26,635 tons from Canada and 173,109 tons from Norway. Canadian supplies, though not up to pre-war shipments, are double those of 1920 which is most satisfactory. The other imports were as follows:—

Groundwood (Dry) 1,227 tons, £33,808, compared with 16,394 tons at £429,579 for first half of 1920 and 4,057 tons at £18,531 in 1913.

Chemical wet: 914 tons, £20,844; 1920, 1,533 tons at £34,695; 1913, 8,843 tons, £32,553.

Bleached Chemical (Dry): From Finland, 51 tons valued at £2,055; Sweden, 205 tons valued at £13,104; Norway, 5,142 at £312,692; Germany, 140 tons at £10,586; other countries, 495 tons at £24,615, which include Canada. A total of 6,033 tons, compared with 16,674 in 1920 and 10,732 in 1913.

Unbleached Chemical (Dry): From Finland, 2,098 tosn valued at £92,470; Sweden, 33,946 tons at £1,405,336; Norway, 16,155 tons at £754,842; Germany, 4,544 tons at £177,559; other countries, including Canada, 2,453 tons at £83,525. A total of 59,196 tons for the half year, as against 252,759 in 1920 and 158,082 in 1913.

The Eureka Blank Book of Holyoke, has announced a wage decrease of 12½ per cent., efffective immediately. About 200 employees are affected. This is the first decrease announced in the history of this company.

Mr. G. T. Milne, now in Johannesburg, will, in October, become Senior British Trade Commissioner for Canada and Newfoundland, succeeding Capt. E. J. Edwards, resigned.

UNITED STATES NOTES

About 150 salaried employees, most of them in the cost and inventory departments, have been laid off by the American Writing Paper Company, Holyoke, Mass. Two weeks pay in advance was given those affected. This is the second big economy move made this year by the company. The first retrenchment measure, taken last April, consisted of reduction of salaries, personnel and pay-roll, affecting every employee, from the president down. The company management ascribes its action to continued business unsettlement, and it claims that its mills operated in June and July at 50 per cent of normal output.

Although paper manufacturers feel they have been deprived of a great deal of business through inactivity of building construction, they do not regard the refusal of landlords to paper their tenants' apartments as a factor in the loss of any trade. The fact is, according to the manufacturers, that business has been good right along. It has been said this Summer, when ordinarily, it is only fair, and this is taken as an indication that the Fall will be as big as they can hope for under present conditions. While landlords have gotten out of the habit of fixing up their leased premises, the tenants themselves are now attending to this to a large extent, and the fact that wall paper is also cheaper this year, is causing them to take the initiative and not wait for the landlord. Buying in general of wall paper lines is reported as more brisk than usual at this season.

The New York State College of Forestry, Syracuse University, has added to its staff of instructors Prof. R. R. Fenska, who resigned recently from the forestry staff of the University of Montana. Prof Fenska will hold the chair of forest engineering at the Syracuse school. He has had a wide and varied experience in the field of forestry. Born in Wisconsin, the son of a pioneer lumberman, Prof. Fenska, spent his early years in the pine forests getting practical experience. He is a graduate of Beloit and Yale forestry schools, he has taught at the Wyman school of the woods, and at the University of Wisconsin, and has been engaged at various times in United States Forestry Service work and surveys.

Drake Hotel, Chicago, has been selected for the annual meeting of the Western Division of the National Paper Manufacturers' Association January next. Robert H. Ritchie, of W. C. Ritchie & Co., Chicago, chairman of the Association, announced the selection of the recently completed Drake Hotel following a conference, and he also appointed a publicity committee of which G. J. Kroeck, of the Kroeck Paper Box Company, will act as chairman.

B. Edwin Hutchinson has resigned his post as treasurer of the American Writing Paper Company to become associated with an automobile concern in the Middle West. Mr. Hutchinson, will also relinquish the office of president of the Holyoke Chamber of Commerce as his new connections will require his undivided time and attention.

Paper mills and other manufacturing plants in Holyoke, were shut down from August 1 to 6, due to the annual stoppage of the headgates of the Holyoke Water Power Company. As usual, the hydraulic equipment of the mills was subjected to an overhauling.

Among the most interesting exhibits shown at the recent Graphic Arts Exposition, at Chicago was that of the Butler Paper Company. This display included a paper making room in which the company gave demonstrations daily of paper making by the method followed half a century ago. Some very good samples of handmade paper were made at this exhibit. Another instructive feature of the Butler Company exhibit was a six-reel moving picture, shown twice daily, which depicted the paper making process, beginning in the North woods and through to the finished paper product and some of its ultimate uses. The picture reel was said to have cost several thousand dollars to produce, requiring its producers to cover over 4,000 miles of territory to get together all its scenes.

A new economy recently put on the market in the stationary line is a self-clasp envelope, the makers of which are said to have completed plans for establishing a chain of factories throughout the United States. S. J. Parks, the inventor of this type of envelope, states that five years ago he began manufacturing this particular style by hand, and four years later invented and patented a machine which now is able to turn out 50,000 daily. The self-clasp envelope is especially designed for catalogues, reports and literature too large for the usual gummed envelope, and has apparently met the demand for a conservative appearing cover which will insure more than a cursory glance at the contents. The The factory making them is located in Long Island City, New York, and it is being run night and day to meet the present demand. It will be relieved of some of this pressure with the establishment in the next few months of factories in several other cities.

P. T. Dodge, president of the International Paper Co., in a statement last Thursday, declared that there was no foundation for reports saying that his company would consider the adoption of wages determined by the arbitration proceeding between representatives of the International unions and a group of paper manufacturers. He said it should be clearly understood that the wages and working conditions set forth in the company's statement to its employees, dated May 24, are the only ones on which the company will employ or reemploy workmen in its manufacturing plants. "Unless business conditions improve," he said, "there will be no object in the company making any effort to start more than two of three of its mills, as their product will not be needed and cannot be sold at any price." Full capacity operation has been resumed in five mills and no more than two or three others will be re-opened until the business situation justifies so doing.

Hearings of the arbitration board mentioned in the above item, were brought to a conclusion with a final session held little over a week ago at [illegible] N. Y. The board spent three weeks visiting all the various paper mill towns collecting data. While no definite announcement has been made, it is believed that meetings for consideration of the [illegible] for arriving at a decision will be held in New York City during the present month.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 6th July.— While, overtly, there are not many tangible signs of increased briskness in the paper trade, as a whole, yet it seems that there is a firmer and more confident under-tone to the trade generally. Looking over the whole field, the buying is, even now, not quite so much of the “hand-to-mouth” description as it was a month ago. In most lines, consumers’ stocks have run remarkably low and hence they are forced to come into the market. But still the volume of trade being done in the majority of lines leaves much—very much—to be desired. The fact is that the lassitude in the paper trade is part and parcel of the very general trade lassitude prevalent throughout the country. This business inactivity very directly effects our own industry. For it means an enormous decrease in the total volume of advertising.

It is, in some ways, strange that this should be so. For it is almost an axiom that, when business is slack, then is the time for extra “pep” and “punch” in advertising. But though, in theory, most manufacturers and retailers alike would probably testify to the soundness of this doctrine, a very large number of them do not practice what they have so often preached. Indeed, it is a laughable and ludicrous evidence of the inconsistency of human nature that many a “captain of commerce,” who, in newspaper interviews of the “How-I-made-a-success-in-business” type, and in postprandial orations, is wont to ascribe a large portion of his success to systematic and discriminating advertising, will be among the first to cut his advertising down to a minimum, or even cut it out altogether, as soon as business seems to be losing its bloom of briskness. Such inconsistency would seem to indicate that his faith in “the uses of advertisement” is, after all, not very robust, and yet that is not altogther the case. Every business man knows, in his heart, that advertising is not a luxury, but a necessity, and certainly not least a necessity when business, instead of coming to a firm of its own accord, has to be gone after good and hard. But he finds, when resolved to adopt a policy of retrenchment, that a reckless slash at advertising appropriations will enable him momentarily to effect a retrenchment with less apparent discomfort to his organization than many other methods of economizing which are open to him. So he takes the line of least resistance—and a “penny wise and a pound foolish” policy it is apt to prove, in the long run.

As has been said, the lassitude in the paper trade is part of the general industrial and commercial depression. This being so, a revival in the paper business will accompany, and form part of, the general trade revival for which everybody is anxiously looking. At present, the public is buying, in nearly all lines of commodities, only for the needs of the day. Merchants are mostly carrying only the minimum of goods that they require from day to day. But there is a point beyond which this kind of thing cannot go. A man may get a pair of boots mended a number of times—but, nevertheless, the day comes when he must purchase a new pair or go barefoot. That is the kind of pass to which the purchasing—or, rather, should-be-purchasing—public is coming. The Fall is likely to usher in a revival of buying in most lines. Then retailers will be compelled to purchase a good deal more heavily in order to meet their ordinary requirements. Once more will the wheels of commerce turn apace and business brisk up. And in such increasing business briskness the paper trade will share. In that trade, as in others, depleted stocks in the hands of wholesalers and retailers will force buying on a largely augmented scale.

PULPWOOD. It was pointed out recently that enhanced market activity is unlikely until the possibilities as to price have been more definitely ascertained. Prices, particularly as regard spruce and balsam, are still unsettled. A number of mills still have large stocks undisposed of.

PULP.—There is not much change to report in the actual pulp situation at the moment. Paper mills still evince a disinclination to stock up with much pulp, and there is a clearly-defined tendency to limit buying, just now, to immediate needs.

NEWSPRINT.—More than once reference has been made to the opinion prevalent in publishing circles that a substantial downward revision of newsprint prices is to be looked for. And this opinion seems to be forming into a conviction on the part of those in charge of newspapers and other publications. No doubt this accounts for the fact that, while several of the newsprint mills are pretty busy, and some of them working to a satisfactory capacity, caution, rather than courage, marks the attitude of buyers as a whole. The writer put point-blank to a newspaper proprietor, the other day, a question as to what figure he expected the price of newsprint to reach before it became completely stabilized. The figure he gave need not be given here—but it was of almost appalling modesty. Certain it is that if a substantial reduction in price is not reached before long, it will not be the fault of the newspapers. Their attitude towards the newsprint producers is, very generally, far from friendly—they “want their money back,” so to speak.

WRAPPING PAPERS.—The kraft manufacturers believe that prices have reached the bottom, and that there will be no further recession. This attitude they are resolved to maintain. It is one which they believe to be justified in view of the reductions that they have already made—reductions that are out of proportion to the reduction in the price of material or labor. The general situation in wrapping papers varies from the somewhat dull to the fairly good, but the kraft aspect of it is better than the others—the reason probably is that it is becoming recognized that prices have reached rock-bottom. The representative of a large kraft mill told the writer that business in July—which, normally, is a very dull month—was “as good as our business in June, and June was the best month we have had this year.” He added that the price of wrapping papers today was only about 100 per cent. over the legitimate price of pre-war days—an increase which, in view of all the conditions of the industry, he considered reasonable, and, in fact, low.

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MANUFACTURING STATIONERY. Extreme caution is being exercised by buyers of manufacturing stationery. The general slowing down of business has had a very detrimental effect on this branch of the trade.

BOX BOARD. A fair amount of activity characterizes the box board situation. The mills are not in the position of having all they can do with in the way of business, but, still, things keep moving and prices are fairly steady.

WASTE PAPERS. The situation as regards waste papers continues dull.

NEW YORK MARKETS.

New York, August 6 (Special Correspondence). — Trade in paper continues of rather narrow compass. There is a moderate demand for certain kinds of paper though it is more or less spasmodic, and there is the usual routine business passing in all grades, but the market as a whole is decidedly quiet and current business is hardly as good as it customarily is during the mid-summer of the year. Consumers are inquiring a little more freely as a general thing, which serves to buoy up sentiment among paper producers and dealers, but actual buying has not improved to any material extent and the firmer feeling in some quarters of the trade seems to be based principally on expectations that the time is not far distant when demand for paper will appreciably broaden.

The latest report of the Federal Trade Commission, covering the month of June, shows that production of paper of all kinds increased in that month a few thousand tons above the May output, and that in spite of the larger production, mill stocks of paper declined during the month. This would indicate that manufacturers are shipping out not only their current production but also a small part of their surplus stock, which situation is viewed in a bullish light by most members of the trade. As a matter of fact, everything would seem to point that business in paper; that is, retail business, is not as poor as many in the trade are inclined to describe it. One of the troubles with the paper manufacturer and jobber today is that his mind is still set on the tremendous volume of business done in the boom period following the war, and that they gauge the market at present with that time rather than with more normal periods. Naturally the result is that the average trade authority is disposed to describe business as extremely dull, when the probabilities are, that, based on the normal volume of buying, the market is not so bad after all.

Jobbers around and in New York City mostly say that small-lot demand is improving. Printers are said to be absorbing a larger number of individual parcels of paper, and demand from other consuming quarters is easily holding its own although the average transaction involves but a small quantity of paper. Mills are not yet feeling this demand because the aggregate amount of buying is such that jobbers, with a few exceptions, are enabled to supply customers without having to place orders for sizable tonnage with manufacturers.

Newsprint is rather easy. Rumors that prices to contract customers will be reduced during the final quarter of the year persist, and have a quieting influence on buying. Publishers are disinclined to place contracts excepting for small tonnage required to cover their wants over August and September, and transient buyers also are operating cautiously. Moreover, repeated offerings of foreign newsprint at prices below those prevailing on domestic paper have a weakening effect and tend to make for careful buying on the part of consumers. It is doubtful whether better than 4.50 cents a pound can be secured from transient buyers for roll newsprint, it being claimed by consumers that they can get all the supply wanted at about this basis or lower. Sheet news also is easy and gradually moving lower in price. About 5.25 cents per pound is considered the market basis on spot lots.

Book papers are quiet from the producers' point of vantage, though activity in the jobbing trade appears to be on the rise. Quotations hold at between 6 and 6.50 cents on machine finished and from 7 cents upward on super book at the mill. Fine papers continue to recede in price. One of the large mills in the East circularized the jobbing trade with samples of a wood bond this week which it offered at 8.50 cents f.o.b. mill in case lots. This paper was of course of rather poor quality, but the price at which it is quoted shows how low bond papers can be bought. Fine paper mills unquestionably are badly in want of business. It is stated by an authority in the trade who periodically travels through the Holyoke district that writing paper plants are not running better than 40 per cent of capacity on an average, while some mills are reported entirely closed down temporarily.

Another dull branch of the industry is the roofing paper trade. This is strange in view of the fact that a tremendous boom in building has set in throughout the States, but roofing felt manufacturers declare they have not felt the effects of this thus far. Apparently surplus stocks of building papers are being used up before consumers and dealers are obliged to go to manu-

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Safranine R.F.F.
Methylene Violet 2R. conc.
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Methylene Blue B.B. conc.
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Paramine Blue 2B.
Paramine Black B.H.
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Paramine Brown G. conc.
Paramine Brown M.
Paramine Fast Bordeaux B.
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Orders supplied direct from Canadian Stocks. New Products will be added from time to time.

facturers for supplies. There is a very bullish feeling in this branch of the trade; nearly everyone expects active business in roofing papers in due time. Perhaps the prevailing dullness is the lull before the storm, so to speak.

Boards are moving in slightly larger volume though the bulk of current activity consists of deliveries against orders placed by buyers a few weeks ago. Prices on box boards are in about the same position previously noted, plain chip being quoted at $28 a ton at the mill and filled news board at about $32.50, with some of the nearby mills delivering board into New York at these figures.

GROUND WOOD. Mechanical wood pulp is in comparatively good demand and prices are marked by steadiness. Domestic producers are asking and receiving around $28 per ton f.o.b. grinding plants, and consumers appear to be absorbing the bulk of supply offered at this price basis though buying is very orderly and there is no keen competition among buyers to secure pulp. Reports from grinding districts invariably tell of this or that mill being closed down in part or entirely, owing to poor water conditions, and such reports obviously have a strengthening influence on the market in that they substantiate the belief existing in numerous quarters that a shortage of ground wood will arise before the winter arrives. Opinion in this connection is prompting grinders and dealers to offer supplies out in rather small amounts, and not to press buyers to take ground wood off their hands.

CHEMICAL PULP.—Offerings of foreign sulphite and kraft pulp at new low prices have further unsettled the chemical wood pulp market, and it can be said that the domestic situation as a result is in a condition bordering onto chaos. Imported bleached sulphite of No. 1 grade is being sold by New York import concerns at 4 cents per pound ex the dock here, while No. 1 unbleached sulphite is freely offered down to 2.50 cents per pound and foreign kraft pulp at 2.40 cents. The reason importers can sell pulp at such prices, it is stated, is largely that of exchange, it being understood that a large part of the supply available in the market at present is of German origin, exchange on which country is so low that importers are enabled to sell pulp in the States at prices which domestic producers claim they cannot manufacture pulp for. There are no stable prices on domestic pulps. Quotations are on broad ranges, and probably only buyers can learn at just what prices purchases can be made. Some fairly large tonnage sales of foreign pulp are said to have been made to American paper mills, particularly in the Middle West, at the low prices obtaining.

RAGS.—There is little demand for rag stock, and prices are irregular and in an uncertain position. Consumers are coming into the market only at spasmodic intervals, and even then are absorbing but minor quantities of rags as directly needed; roofing paper manufacturers, for example, seldom placing orders for more than five carloads when ordinarily they buy anywhere from 15 to 20 cars upward at a time. New cuttings are scarcely wanted, and old whites and blues are sought only in light volume. Repacked old thirds and blues city origin are available at 1.50 cents per pound at shipping points, and No. 1 repacked whites are offered at 4.50 to 5 cents, depending on the grade; No. 2 repacked at around 2.50 cents, and No. 1 miscellaneous packing of whites at 3.75 cents. No. 1 roofing rags are selling at around 75 cents per hundred pounds at shipping points, while No. 2 satinets have been bought by felt mills down to 62 ½ cents f.o.b. New York.

PAPER STOCK.—All grades of old paper are in limited demand, but a comparative scarcity of some descriptions serves to sustain values in the face of the light movement into consuming channels. For example, soft white shavings of No. 1 quality are held at 2.10 to 2.20 cents per pound New York by dealers, who generally refuse to book orders for less, claiming that printers are cutting few shavings at present and that packers consequently are holding firmly such stock as they have on hand. White cuttings also are steady at about 1.50 cents a pound at shipping points. Perhaps a carload or two might be secured at a trifle under this level, but no dealer will commit himself on a sizable tonnage at less. Old books command an average of 85 cents a hundred for No. 1 heavy flat stock, No. 1 old kraft is bringing 1.50 cents, hard white shavings of No. 1 grade about 2.65 cents, and ledger stock in the vicinity of 1.50 cents. Folded newspapers and No. 1 mixed papers are weak and board mills in the East are filling their requirements through purchases at an average of 32½ cents New York for the former and 22½ cents for the latter.

OLD ROPE AND BAGGING.—Old rope rules quotably steady at around 4 cents per pound for No. 1 manila rope at shipping points, with now and then a lot of imported rope offered a little under this price. Bagging is dull and nominal in price

LINK-BELT STEEL CHAIN DATA BOOK.

The Link-Belt Company of Chicago, Indianapolis, and Philadelphia have just issued a new Steel Chain Data Book No. 475.

In his book is presented completely the heavier rugged steel chains used for Power Transmission, and also including Elevating and Conveying Chains.

Copies can be secured by any of our readers interested in this subject by addressing the Link-Belt Company.

We quote from the foreword of this book:—

Sprocket wheels play as important a part in the satisfactory operation of a drive as the chain itself.

If you are looking for satisfactory operation of a chain drive, and a low maintenance cost, don't expect to get it by buying a chain from one maker and sprocket wheels from another.

You can do that with leather or rubber belts and pulleys, but not with chain and sprockets.

The sprocket must fit the chain, and must be ground or machine finished to secure this fit. Money paid for a well fitting sprocket wheel yields large returns.

WHAT DID YOU DO?

Did you ever send out "the one and only" catalogue in your line and then, after the natural first wave of orders, find you had run into a dull and sickening calm? What did you do?

A recent issue of "System" tells how one alert manufacturer answered the problem by means of a Sales letter.

He would pick out a few lines open for cancellation next year and offer these at a discount—BUT—he referred to them in his Sales letter by number and catalogue page. He got orders for the discounted line and other orders also, because he got the buyer thumbing through the catalogue—which was the purpose behind the Sales letter.

It certainly sounds worth trying.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., August 18th, 1921.** No. 33

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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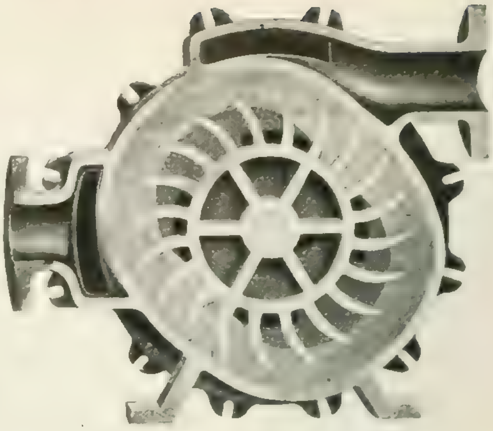

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THE Nash Hydro-Turbine Vacuum Pump is the practical pump for use in pulp and paper mills.

No valves, no gears, no piston, no cylinder, no reciprocating parts, no bearing adjustment—an efficient, always dependable pump, non-pulsation and not requiring the service of an expert attendant.

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EDITORIAL

THE CHEMISTS OF THE EMPIRE.

The best chemical brains of the Empire are represented in the Society of Chemical Industry. The last few years have shown how dependent a nation is on its chemical power, both in military and industrial matters.

Canada is honored as the meeting place this year of this great society of chemists and the convention will begin in Montreal on August 27th. A program is given on another page. Special attention is given to the pulp and paper industry, not only as a *key* industry of Canada, but one where chemistry is the predominating scientific factor. All interested are invited to attend the meeting. (See article on another page.)

LABRADOR.

"Yez can't believe half yez hear, and the rest ain't true", said Pat. Perhaps he was right. The Irishman's observation is brought to mind by recent conflicting reports regarding pulpwood in Labrador. Mention has already been made in the Pulp and Paper Magazine of the expedition by airplane and on foot in charge of Major Owen in 1919. He reported excellent stands of spruce and a company of rather large capitalization was formed. Some people, who are not as enthusiastic over Labrador as Dr. Grenfell, for instance, were a bit skeptical of Major Owen's statements and this summer a party under Mr. H. C. Bellew, of Montreal, did a little exploring and report that nothing but scrub spruce was found.

That is what others have said.

On the other hand, Mr. A. Tourangeau, a director of the Quebec Labrador Pulp and Lumber Co. spent three months exploring the company's limits last year and had been over the ground in 1914. He declares that the Bellew party, absent, from Nova Scotia only from July 14 till August 4, could not have done a thorough job, especially as they had some serious mishaps, and makes the assertion, backed by airplane photographs, that there are millions of feet of good timber in Labrador. He says:—

"There is no wood for 15 or 20 miles back from the sea coast, and any expedition that went to look over the timber possibilities would have to spend two days before getting into the wooded area. Our limit is on the Pinware River, and covers 734 square miles. Our American lumber cruiser declares that he can guarantee 2,800,000 cords of pulp wood on the limits, besides the saw timber. There is a large river and water power capable of developing 8,000 h.p."

"The expedition superintended by Major D. Owen in 1919 was to the southern portion of Newfoundland Labrador, about Battle Harbour, which is not quite so far down as Hamilton Inlet, where is located the limit that Mr. Bellew went to explore."

Now Labrador may be called a limitless country, inasmuch as the boundary between it and Quebec has never been definitely fixed. It is therefore quite possible that both reports are reasonably accurate when all the circumstances are known and considered. The country lies southeast and east of the height of land, the rivers flowing into the north Atlantic ocean, the winds from which would be cooled by the icy Labrador current. It is unfortnate that no impartial government survey has been made, the knowledge we think we have coming from exploration by parties having the exploitation of the country (some are so unkind as to intimate other motives in view). Both the reports referred to agree that there is no timber on the sea coast. Whether there is enough on then interland plateau to support an industry is something we don't know.

The whole question further emphasizes the position we have always taken in such matters, namely, if a person centemplates putting money into any business, he should get reliable information as to the resources behind the proposition. This is nowhere more essential than in an industry dependent on the forest, the extent of which is so easily exaggerated, or expressed so as to be misunderstood by the ordinary investor. We refrain from taking any sides on the Labrador question until we have better information. The situation emphasizes the need for an accurate survey and inventory of our resources. If there is wood in Labrador that can be economically exploited, it should be utilized. In the mean time we would point to the familiar sign: "Look before you drive in."

1031 *FEET!* *CONGRATULATIONS!*

A long distance telephone message last Friday brought the good news from Grand'Mere that newsprint machine No. 9 was making first class paper at 1031 feet per minute. This constitutes the world's record for machine speed in making good paper. It was not just a sprint, either, as the machine has been running at better than 1,000 feet steadily for several days and the output is more than satisfactory. Furthermore, it is good paper; we have a sample of it. While it seems that the preparation of the stock might be improved a little, the formation is good and the finish is all that could be desired. We believe, that, except for the motors, which came from England, the whole machine, including felts, represents Canadian industry and ingenuity.

We congratulate the Laurentide Company, the Dominion Engineering Works, the Harland Engineering Co. and any others—including the machine crew—who have brought this honor to the Dominion.

While we are properly enthusiastic over the exploits just mentioned, it would not do to pass a similar important event in the United States. At Wisconsin Rapids, the Consolidated Water Power and Paper Co. is operating a newsprint machine built by the Beloit Iron Works to run at 1400 feet. It is driven by a General Electric sectional drive. At present the machine is running at about 800 feet and will, no doubt, be equal to 50 per cent better than that. The starting of the big machine was the occasion for a 48 page special edition of the Wisconsin Rapids Daily Tribune, which contains a complete description of the mill, the machine and a number of special articles on appropriate subjects. It is a fine number. Great credit is given to the vision, faith, courage and inspiration of the president of the C. W. P. & P. Co., a man widely known and well loved by the Canadian pulp and paper industry, Mr. George H. Mead, also president of the Spanish River Pulp and Paper Mills.

BIG, EVEN FOR NEW YORK.

The Exposition of Chemical Industries, to be held in New York the week of September 12th, will be big, even for New York. This annual show of chemical and allied iindustries has become an important event and is really a milestone on the road of chemical development. Perhaps it would be more appropriate to say that this effort is a monument to the industry that, perhaps, more than any other, is responsible for the present state of our civilization.

To attend this exposition is not only a remarkable educational opportunity but a convincing demonstration of the fundamental part which industrial chemistry plays in our daily life.

The Industrial and Educational Publishing Co., will be there, and readers of the Pulp and Paper Magazine are invited to make the fulltst use of our beoth at the 8th Coast Artillery Armory, September 12-17.

COBWEBS.

Secretary Hoover's "assay of industrial waste" in the United States, shows that the building trade wastes 1-3 of possible working days. This is largely due to the shifting of skilled men from job to job.

A single day's imports of chemical pulp from Europe last week totalled more than 18,000 bales. Prices mentioned were close to pre-war figures. It looks as if foreign pulp makers were selling below cost or living below par, for the benefit of U. S. paper makers.

Benjamin Strong, governor of the New York Reserve Bank, told a Congressional Committee that the industrial depression is definitely at an end.

Apropos of the passing of dividends, it is cheaper to hold money in the treasury, for a possible rainy day, than borrow more if it pours; and if it doesn't rain, the sunshine is all the brighter when the clouds have passed—there is cash on hand for the picnic.

In 1920, the monthly average of imports by France of Canadian newsprint was 507 metric quintals; in 1921 (six months), the average was 62, with no imports at all in June. For paper boxes, the only other place where Canada appears, the figures were 55 for 1920 and 4 for 1921.

It is a pretty state of things when a strike of British shipyard workers makes it necessary to send a Canadian ship to a German port for repairs.

DEFORESTATION IS CAUSE OF FAMINE.

China's great famine is the result of deforestation, according to foresters of the United States Department of Agriculture, who asserted in an official statement today that the once fertile country of China is now subject to frequent droughts and floods, that mountains, stripped of trees and undergrowth, allow rains to run off rapidly, and that the result is famine in seven out of every ten years.

"The ruthless destruction of their forests by the Chinese," the Department of Agriculture's statement read, "is one of the reasons why famine and plague today hold this nation in their sinister grasp. Denudation, wherever practised, leaves naked soil; floods and erosion follow, and when the soil is gone men must also go—and the process does not take long." Forests, it is pointed out, not only play an important part in the distribution of mankind over the earth's surface, but also deeply affect his spiritual, physical and economic life. A country that recklessly wastes its natural resources faces ultimate poverty and decadence. History is full of such examples.

"In the provinces of Honan, Shensi and Chihli, China, over an area some 100,000 square miles in extent, several million people are starving. The immediate causes of the famine were disastrous floods, followed by long periods of drought, which resulted in the failure of three successive crops."

A STATIONERY TEST.

A firm had a certain proposition to make to a large list of possible customers. It did not know whether to use good or cheap stationery and determined on a test. Two thousand names were picked at random from the list. One thousand letters on good and one thousand letters on cheap stationery were mailed—not a particle of difference, except in the quality of the stationery. The cheap stationery brought 20 per cent inquiries and the good stationery 32 per cent.—Business Methods.

When morning comes get into your clothes in a hurry and then get into a hurry in your clothes. The Hoffman Henchman.

The Wall Street Journal in a recent issue significantly declared that "of 1920 failures, 84 per cent were firms which did not advertise. There's an implied contract with the public in honest advertising which tends to keep a firm straight."

The man who looks for a long period of depression is quite as foolish as the one who thought war profits could last for ever.—A One Philosophy.

Groundwood Preservation Tests

By JOHN S. BATES.

The experiments described in this paper were carried out in the Kenogami Mill of Price Brothers & Co. Limited. The large scale preservative treatments of groundwood pulp were undertaken in July and August, 1919, and represented one phase of investigation in connection with the general study of decay in wood and pulp. (See also Pulp and Paper, July 30, 1921.)

Each year during the high-water periods of the spring and summer several thousand tons of groundwood laps are stored for use in the following winter and considerable quantities are carried several years. In the large pulp storage building there is a certain amount of rotting and discoloration, especially at the crevices between the piles. This is lessened by keeping the water circulating in the groundwood system at a moderate temperature during the summer, so that the pulp does not go into storage too warm. Laps piled outdoors usually remain in good condition due to low temperature and good ventilation, the trouble being mainly with freezing of laps during winter use, mechanical losses and dirt. Both lapped groundwood and pressed bales are subject to deterioration by the action of fungi and moulds.

A good deal has been written on the subject of decay in groundwood pulp and it is hardly necessary to review the principles. The typical varieties found in the pulp storage building were red or brown rot, dark brown or black rot and grey discoloration. Laboratory tests showed that the reddish-brown rot extending through portions of the pulp was the most serious, as the fibrous nature of the pulp was largely destroyed and hot water extraction gave losses of from 5 to 10 per cent or more. According to the drainage test figures the freeness of the infected pulp was much the same as sound pulp, but on mixing the two there was a decided slowing effect due to the finely divided red pulp. The dark brown or black rot gave a bad appearance to the pulp but was largely confined to the surface layers of the laps. Samples showed losses of from 3 to 5 per cent by extraction with hot water, compared with 2 or 3 per cent for sound pulp. Grey streaks were common in storage laps, the discoloration of moisture resulting from pressure in the pile. The grey color disappeared with oxalic acid and appeared to be iron tannate stain (perhaps caused by tannic acid in the wood and iron in the mill water forming a slight amount of ink in the pulp). The fibres were unaffected and the hot water extracts were low.

Preservative treatment of wood is practised commercially on a large scale, chiefly on railway ties, wood paving blocks and other wood products that are placed in fairly damp locations where fungus action is rapid. The chief preservatives are coal tar creosote oil and zinc chloride; sodium fluoride, mercuric chloride and other substances are also of importance. As groundwood pulp is merely finely divided wood, it was thought worth while to try ordinary wood preservatives even though the action in the case of pulp might be somewhat different. Certain preservatives such as creosote oils of course cannot be used because they would discolor and oil the pulp. Zinc chloride, mercuric chloride and sodium fluoride were chosen from among the water-soluble preservatives which might be used without serious trouble in connection with using the pulp after storage. Zinc chloride is somewhat corrosive and acid in tendency. Mercuric chloride is highly toxic but rather dangerous to handle on account of being so poisonous. Sodium fluoride is a harmless white salt and has the advantage of being only moderately soluble in water (about 4 per cent) which reduces the tendency of leaching out after treatment of the wood or pulp. The salt is neutral in reaction and non-corrosive. The possibility of liberating strong hydrofluoric acid in the presence of acid is a doubtful disadvantage, as the pulp is not likely to meet with such a condition.

When wood is treated, the preservative is usually forced in by flooding the wood with the solution or oil in a large retort and applying high air pressure and moderate temperature for an hour or more. Even then the preservative penetrates across the grain less than an inch to protect the exposed surfaces. Treating pulp is much simpler because the material is finely divided. The problem is mainly one of mixing the preservative uniformly with the pulp and at the same time preventing a large loss of chemical in the water pressed from the pulp. A simple method for commercial practice would be to have a wet machine with two pairs of press rolls, the first for pressing out the water from the thin sheet and the second for reeling up the lap under light pressure while the small amount of preservative solution is sprayed on the top roll so that practically all the chemical would stay in the pulp. For the experiments one of the ordinary groundwood wet machines had to be used. The chemical solution was made up with water to the desired strength in barrels feeding by gravity to a measuring cylinder placed above the wet machine press rolls. This cylinder was connected by flexible hose to a brass spray pipe perforated on top with 1-16 inch holes spaced two inches apart, the spray pipe being mechanically oscillated two inches back and forth during each revolution of the press roll. The valve was adjusted to feed the solution at a very slow rate as calculated (about five pounds of solution per minute). The solution from the spray pipe fell on a felt roll fitted to the top press roll, so that the chemical was continuously forced into the pulp sheet as it formed into a lap. The feed was simple and automatic, except for making up the solution in the supply barrels and occasionally adjusting the control valve attached to the measuring cylinder.

The ordinary lap was made up of about twenty layers of this groundwood sheet in one minute and weighed about 33 lbs. wet, equivalent to about 10 lbs. of air-dry pulp (based on 10 per cent moisture content). Tests showed that in forming a lap on the wet machine approximately 100 lbs. of water were pressed out from the wet groundwood sheet and in addition 100 lbs. of water were pressed out from the felt, so that roughly 200 lbs. of water were removed at the press rolls in producing a lap containing 10 lbs. of air-dry pulp. There was, therefore, a good chance of losing some of the chemical solution by continuous squeezing between the press rolls, although this was lessened by spraying the strong solution on the top of the upper roll. The white water from the press rolls was measured and sampled at intervals during the treatments with the idea of measuring this loss of chemical by analysis, but the determinations did not prove satisfactory. Samples of pulp were also taken from occasional laps in the hope of finding the proper tion of chemical remaining in the pulp, but these analysis were difficult and inaccurate. While the amount of preservative used in each case was known, it is hard to say what proportion actually remained in the pulp. However, the uncertainties of treatment and losses of chemical could be corrected by suitable arrangement of equipment if regular commercial treating were taken up.

Each treated lap was weighed and marked for identification. Untreated laps were also taken and marked for comparison in storage. Moisture samples were cut at intervals to determine the dry weight of pulp. In each test the equivalent of from one to two tons of air-dry pulp was treated. The pulp from the six runs was stored under various conditions, as will be described later.

According to Humphrey, (*) the toxicities of the preservatives to wood-destroying fungi, in terms of concentration of chemical on the volume basis (grams per 100 cc. of medium), sufficient to prevent fungus growth, are as follows: — zinc chloride 0.5 to 0.75 per cent, mercuric chloride below 0.1 per cent, sodium fluoride 0.15 to 0.25 per cent. These figures served to some extent as a guide in choosing the proportions of chemicals to be applied to pulp. For convenience the proportions were figured on the air-dry weight of the pulp, these percentages being considerably higher than the equivalent concentrations on the volume basis. The treatments of groundwood pulp were designed to give one light and one heavy treatment with each preservative, the former representing moderate cost and possible value in retarding decay and the latter representing high cost but certain preservation from decay if the substance is any good for the purpose. The proportions of preservatives used to air-dry pulp treated were: zinc chloride 1.11 per cent and 3.61 per cent, mercuric chloride 0.057 per cent and 0.187 per cent, sodium fluoride 0.581 per cent and 2.90 per cent. The zinc chloride was commercial grade in fused form as ordinarily used for wood preservation and analyzed about 90 per cent purity. The mercuric chloride was the chemically pure grade. The sodium fluoride was commercial grade in powder form as used for wood preservation and was about 91 per cent pure. The lighter treatments cost in the neighborhood of $2 per ton of pulp while the heavier treatments cost roughly $7 or $8 per ton, as far as the values of chemicals are concerned. The more important details are summarized in the table.

The analysis of pulp and white-water samples for chemical contents proved so difficult that it was decided not to carry them to completion. In the light zinc chloride treatment the retention of chemical in the pulp was approximately 80 per cent of the total used, while in the heavier zinc chloride and sodium fluoride treatments the retention was only about 50 per cent.

The storage tests were carried out under various conditions to find the relative merits of the preservatives in retarding decay for a long period. This was the really difficult part of the problem, owing to the number of factors which affect the progress of decay and the uncertainty of determining exactly what the conditions and results really are. However, the general observations during a year and a half of storage were definite enough to allow certain valuable conclusions.

From each run the main supply of treated and untreated laps was piled in the groundwood pulp storage building. For the first eight months the pulp remained in separate, exposed piles at one end of the building in a cool location where very little deterioration would be expected in any case. At the end of this period there was little change in the pulp. The only distinctions noted were that the zinc chloride had caused small black spots to appear through the pulp and that the mercuric chloride had produced small gray patches on the surface. These defects will be discussed later.

When the regular pulp was out of the building, the special piles were transferred to the centre of the floor and were gradually covered up by the season's supply of storage pulp. After twelve months under ordinary storage conditions the piles were again open to inspection when the building was nearly empty. The black spots in the zinc chloride laps were more pronounced than before, as were also the dark grey patches in the mercuric chloride laps. The sodium fluoride laps were all in excellent condition, the only change being a certain amount of pale grey discoloration as ordinarily found in storage pulp. The untreated laps in each case followed the treated laps in appearance to some extent, showing the effect of contact in the mixed piles. In general the untreated laps showed less black discoloration but slightly more rot of the ordinary varieties, although deterioration was not serious after nearly two years in storage. The piles were moved to another location in the storage building for further observation.

The most striking results were obtained from storage under conditions where fungi and moulds could develop at a faster rate. After each treatment on the wet machine about twenty treated laps and ten untreated laps were taken for special storage in a brick kiln in the paper-mill basement. In each of the six piles the untreated laps were placed together in the middle section

TABLE I—SUMMARY OF PRESERVATIVE TREATMENTS.

Preservative Used.	Zinc Chloride		Mercuric Chloride		Sodium Fluoride	
Treatment	Light	Heavy	Light	Heavy	Light	Heavy
Weight of wet treated pulp, lbs.	13,713	8,966	7,018	10,893	10,675	6,376
Average air-dry pulp, per cent	29.3	32.1	29.1	31.1	28.6	29.5
Weight of air-dry treated pulp, lbs.	4,018	2,878	2,042	3,387	3,053	1,880
Average rate of air-dry pulp from wet machine, lbs per minute	12.25	9.9	9.4	10.4	9.8	9.85
Strength of solution, per cent	3.0	7.15	0.107	0.428	1.14	2.86
Rate of solution feed,—lbs. per minute	4.54	5.0	5.0	4.54	5.0	10.0
Weight of original chemical based on weight of air-dry pulp treated, per cent.	1.11	3.61	0.057	0.187	0.581	2.90
Cost of preservative.						
Dollars per lb. of chemical	0.10	0.10	1.75	1.75	0.15	0.15
Dollars per ton of air-dry pulp	2.22	7.22	1.99	6.55	1.74	8.70

(*) "U. S. Dept. Agric., Bulletin No. 227, "The toxicity to fungi of various oils and salts, particularly those used in wood preservation."

and were separated from the treated laps by pieces of cotton dryer felt. The kiln outlets were closed to block ventilation and water was placed in a barrel to keep the air humid, while the temperature was maintained between 20° and 30° Centigrade. In a few weeks there were distinct signs of decay and the progress of rotting continued steadily. The pulp was examined from time to time by opening out each lap. Although the atmosphere in the kiln was kept decidedly humid, there was considerable drying out of the pulp, the top laps finally becoming nearly air-dry and the bottom laps retaining their original moisture content of about 70 per cent. The canvas dryer felt moulded and affected the adjacent laps in a special way.

The results after eighteen months in storage will serve to show the comparisons. The laps from the light and heavy zinc chloride treatments were badly discolored by characteristic black spots scattered through the pulp, the effect being worse in the case of the heavier chemical treatment. There were also a few bright red patches, but the ordinary forms of brown and black rot were present only to a very slight extent. Through the courtesy of Mr. F. J. Hoxie (Special Inspector, Associated Factory Mutual Fire Insurance Companies, Boston, Mass.) and Mr. H. N. Lee (now Microscopist, Hammermill Paper Company, Erie, Pa.) typical samples were examined and photomicrographed early in 1920. The black spots were caused by clusters of brown fungus filaments, so that the peculiar fungus discoloration was apparently stimulated by the presence of zinc chloride. The untreated laps in this group were seriously affected by red, brown and black rot which extended through many laps and by white surface mould as well, while the black spots typical of zinc chloride were absent. Some of the laps were so far gone that they fell to pieces on handling.

The laps from the light and heavy mercuric chloride treatments were also badly discolored but in a different way than the zinc chloride laps. There was a speckled appearance, mainly on the surface, due to characteristic green and gray patches. Hoxie and Lee showed that this was mould, probably *Penicillium*, which causes the ordinary moulding of bread. Practically no red rot was present and the pulp had been fairly well preserved from decay, but the appearance was bad on account of the peculiar moulding stimulated by the chemical treatment. On the other hand the untreated laps were in much worse condition due to brown rot, large black patches of powdery mould and white surface mould.

The laps from the light and heavy sodium fluoride treatments remained in such good condition that the comparisons were striking. In most cases the laps looked the same as when they were put into the kiln. In the lower portions of the piles where no drying had taken place there were a few pale grey patches such as usually occur in regular pulp coming from the storage building. Hoxie and Lee pointed out that this discoloration was not due to fungus or mould but was probably an iron tannate stain. The color disappeared when samples were treated with oxalic acid and in various respects it acted like a simple iron tannate ink, as proved by making up such a mixture in pulp for direct comparison. After eighteen months in the kiln the treated laps were fully as good as sound storage pulp and the light treatment with sodium fluoride had been sufficient to preserve the pulp from decay. The untreated laps in these piles were not as bad as in the other groups, perhaps due to partial protection by association with the treated laps. The untreated laps, however, were noticeably affected by decay in the form of black and brown rot and slight mould.

As a check on the above kiln experiments, a second kiln was later brought into service to try the effect of accelerated rotting conditions on some of the laps that had been in the pulp storage building for the first eight months. Piles of about twenty laps each were stored in this kiln, the treated laps in each case being in separate piles from the untreated laps to obtain a fairer comparison. Although there had been only slight deterioration in the storage building, the pulp soon began to rot in the warm moist kiln. After ten months the results were almost directly in line with those described for the first kiln, except that the rotting had not progressed quite as far. Here, again, the treated laps were in general decidedly better than the untreated laps, while the sodium fluoride laps were outstanding in comparison with the discolored laps of the two other chemical treatments. It was also noticed that screenings stood up better than fine pulp. Furthermore, there was reason to think that pulp which had dried slightly to a medium moisture content was more rapidly attacked by fungi and moulds than laps which had remained damp or had become decidedly dry.

In conclusion it appears that sodium fluoride is a promising preservative for groundwood pulp. Under the varied conditions of testing it preserved the original color and quality of the pulp satisfactorily. The lighter treatment was sufficient and was comparatively inexpensive. Further experience would be necessary to establish the exact proportions of chemical necessary, the costs of treatment on a commercial scale and the effectiveness in retarding decay under all conditions of storage. For those cases where groundwood pulp is likely to suffer serious deterioration during long periods in storage or shipment it is possible that a preservative treatment of this kind would prove economical and valuable.

N.B. STUMPAGE RATES DISCUSSED.

St. John, N.B., August 10.—The Provincial Government met in session here this afternoon and evening. The most important question to come up was that of stumpage rates in this province.

In the afternoon, a delegation, consisting of Hon. J. P. Burchill, A. Mclean, F. M. Anderson, Donald Fraser, W. B. Snowball, F. W. Beatteay, Jas Robinson, John E. Sayre and R. W. McLellan, waited on the Government. A memorial was presented dealing with different questions in regard to the administration of the Crown lands, and requesting that certain changes be made in regard to colonization. It was also requested that the method of scaling be changed and that of Quebec adopted. The delegation asked that the stumpage rate on spruce be reduced to $2.50 a thousand, this rate to be retroactive for last year's cut. It was contended that this action was necessary on account of the bad condition of the lumber market, the depreciation in the value of last year's cut and the large quantity of lumber now on hand that there is no market for. The Government promised consideration of the requests made.

Among the suicides in the U. S. A. last year were thirty-six millionaires and twenty-three million-heiresses. Evidently having money to burn doesn't get rid of all the troubles of life.—Pathfinder.

CROWNING A CALENDER ROLL.

Although not many men are called upon to perform this delicate operation, nevertheless the successful crowning of the roll plays such a vital part in the making of paper that everyone is more or less interested.

The following article taken from The Super-Calender, a publication issued by the Pusey & Jones Company, contains some suggestions and information that might be of value to the readers of Pulp and Paper. The article, which was in the form of a letter, says:

For a stack of calenders it is customary to put the principal crown in the bottom roll only, also a much smaller crown in the top roll, and no crown at all in the intermediate rolls, grinding these perfectly straight or of the same diameter throughout their faces. The crown, which means larger diameter in the center than at the ends, is put in the bottom roll to make up as much as possible for its deflection, and thus make its top as near as may be a perfectly straight line. The bottom of the roll will then be nearer to the floor in the middle of its length or face than the ends, and will form a curved line from one end along the bottom, to the other end.

A roll or a shaft will deflect slightly from its own weight, but in addition to its own weight, which it must carry, a bottom calendar roll must also carry the weights of all the rolls in the stack above it, and it must also carry the weight or pressure which is put on the journals of the top roll through the system of weights and levers on the top journal boxes. The amount of crown of bottom calender rolls vary with the diameter and with the face of the rolls. A botton roll may be considered a cylindrical beam supported on both ends, and uniformly loaded throughout its length. The formulas for strength of such cylindrical beams indicate that strength and stiffness vary in proportion to the cube of the diameter, and therefore, you can see how quickly the strength and stiffness of such a roll increases by every inch in addition to diameter. The strength and stiffness of such a cylindrical beam also vary inversely as the length or face, and therefore, of two rolls of the same diameter, but of different faces, the longer roll should have more crown than the shorter in proportion to its face, but of two rolls of the same face, the strength and stiffness varying in accordance with the cube of the diameter, the larger the diameter of the roll, the more rapidly less would become the need for the crowning.

Perhaps we would judge that for the botton rolls of stacks of calenders for paper machines, the crowns would vary between probable limits of from .010" to .030". Of course, .001" is a very small measurement, but several of them together make a measurement that is quite appreciable, particularly when it is indicated by a micrometer caliper, which should always be used when grinding rolls.

A very small amount of crown is usually put in the top roll of a calender stack because the strain downwards on the journals, due to the weights and levers, tends to spring the ends of the top roll downward and the middle of the roll is made slightly crowned or a little larger in the effort to make the middle of the roll press as hard as the ends press. All the intermediate rolls of a stack are ground straight, because theoretically and practically too, they are squeezed between the straight line of the top of the bottom roll, and the straight line of the bottom of the top roll.

It happens to be a curious coincidence that today one of our expert men is away at a paper mill, because they have reported that of two stacks of calenders, the rolls of which we recently ground for them, one stack is working finely and the other is not calendering out to its full width. The fact that we have just ground both of these stacks in our shop, and with perhaps if anything unusual care, makes us feel when we instructed our men to go to the mill to remedy one stack, that he would find the vertical line of rolls not quite accurate, due possibly to wear in the journal boxes, or from the fact that possibly the mill men had re-babbitted these boxes and were not strictly careful enough to see that when they did so, the rolls were stacked up one upon another in a perfectly vertical line. If rolls in a stack are not in perfect alignment, vertically, they will not calender properly out towards the edges of the sheet of paper. You can try this effect very readily yourselves with two lead pencils. Place them together, one over the other exactly, and they will touch throughout their length, but begin to cross one on top of the other, a little bit out of line, and then a little more out of line, and so on, and you will soon see that they are touching hard in the middle and less and less towards the ends until if you cross them enough the ends will not touch each other at all. Neither will calender rolls in this condition calender properly the edges of the paper.

A stack of calender rolls may look at a glance to be all in good positions, but will they prove to be so when a careful erector knows how to use and does use a steel straight edge and a fine plumb bob and a line on them? In fact, we might go a little further and say that it is just this skill and knowledge of an expert erector who can erect a whole paper machine and have it move off and make merchantable paper the first day, as compared with a less skilled man who may put together the thousands of pieces of a paper machine until it really does look like a machine, and yet will require weeks of adjusting and misadjusting before it will successfully make the delicate and sensitive fabric, called a web of paper.

CAPITAL ADVICE.

The Chemist has no E Z life.
And if he would X L,
He must get all the A D can,
R E cannot do well.

He will become a C D man,
And oft be called A J,
Unless he gets what L P can,
Obtained in N E way.

So if he fondly hopes 2 B
Successful ere he die;
In K C he wants to stand with men
Who R A counted high.

Let him work hard and take A Q,
B E so very wise,
If every D D does is right,
He surely must R I's.

Let him keep B Z every day,
And C K task to do,
Or LC cannot hope 2 C
The N D has in view.

Wm. H. Woodwell, in
The Chemist-Analyst.

Forestry in France

By EDWARD BECK, Publicity Department, Canadian Pulp and Paper Association.

Not the least of the post-war reconstruction problems confronting France is that of the restoration of her productive forests. Before the war these forests comprised aproximately 185,000,000 acres and although they did not constitute the country self-supporting in forest products they went very far in that direction. The bulk of these forests, about 177,000,000 acres, were in private hands, 3,000,000 were owned by the State and the balance by the communes.

The war wrought great havoc with the French forests. Those that did not succumb to the deprecations of the enemy or were destroyed through being in proximity to the fire zone, were heavily drawn upon for firewood, trench timber, and other war necessities, so that at the Armistice the Water and Forest Board of France, which is the national body clothed with authority over the forests and internal waterways, found itself with a program literally "shot to pieces," a greatly reduced staff and a depleted budget with which to begin building anew. That the Board, backed by the Government, has taken up the problem with vigor and great energy is typical of the French spirit which remains undiminished in the face of the greatest difficulties. Nevertheless, the authorities all admit that, given the most favorable developments, it will take at least a century to bring France's forests back to the state of productiveness in which they were prior to the summer of 1914.

A survey immediately after the armistice showed that in the territory occupied by the enemy, the forests had been ruthlessly destroyed, irrespective alike of the German army's actual requirements and of the effect upon France's economic future. The war zones spread over eleven forest-bearing departments, including Aisne, Ardennes, Marne, Mewithe, and Mcselle, Meuse, Nord, Oise, Pas-de-Calais, Somme, Vosges and Belfort Territory. In these parts 300,000 acres of state forests. 322,500 acres of parish forests and 922,000 acres of privately-owned forests were subjected to devastation. In over one-third of this territory the productive capacity of the forests was completely destroyed. Over half a million acres must be refitted and rewooded to make it of any use. Another area of 375,000 acres shows the efects of abusive, premeditatively destructive or wasteful fellings in which reserve plantings have been almost obliterated. It is calculated that it will require from 60 to 100 years of intensive cultivation to bring these forests back to normal. Their loss involves to France an annual shortage of over 1,000,000 cubic meters of wood.

France looks to Germany to assist in meeting her timber necessities as well as to provide some of the funds needed for rebuilding her forests. The Peace Treaty stipulated that Germany should deliver to France all the timber necessary for reconstructing the devastated regions, and this work is now going on. It also obligated Germany to make further deliveries of timber on account of the indemnity due to France. These deliveries have been hampered by the lack of adequate transportation facilities, but eventually, they are expected to reduce the scarcity of timber in France until such time as the forests can again become productive.

Meanwhile, the French people themselves are not losing time nor sparing any effort to hasten the coming of that period. The Water and Forest Board has been entrusted with the supervision and direction of the work of reconstructing the forests and for that purpose has set up a special Forest Reconstitution Service. In each department which suffered from invasion there has also been established, independent of the usual forest inpections, a special so-called "Forest Reconstitution Inspection," each with a special staff with definite duties all relating to the restoration of State, parish and private-owned forests as well as to rewooding.

The work in the State forests is done entirely at public expense. In the case of the parish and private forests the French parliament has set up a Fund, budgeted as "Forest Reconstruction Works," upon which the parish and private owners may draw for the means to re-establish their woods. These funds enable the Forest Board to effect restoration works, in agreement with the private owners, in the latter's forests, the outlay eventually to be recouped, it is expected, out of the indemnities received for war damages.

The work of reconstruction is well started as a personal visit to some of the war-devastated areas disclosed. The first steps taken involve clearing the land of wire entanglements, filling trenches, dug-outs and mine craters, opening up roads and paths and making it possible as well as safe for the forest rangers to go about their tasks. Recutting of the underwood spoilt by shrapnel and shot or improperly worked by the friendly or enemy troops is another preliminary step. Reserves damaged by projectiles but which may still be utilized, are being cleared up and restored. Incidentally, a considerable amount of timber used for defense works has been recovered and is being utilized for new buildings.

Nurseries have been established by the Forest Service nearby the places where new planting is going on. Many sources, including Canada, are being drawn upon for the necessary seed. Delivery of plants and seeds has also been claimed from Germany as compensation in kind. Restocking is being carried on in accordance with a plan carefully elaborated by the Forest Board with special reference to the mutual adaptability of the soil to the seeds and with regard to ensuring a maximum yield of timber in a minmum period.

It is in the great State forest ranges of St. Gobain and Coucy (Aisne) that the war has worked its greatest ravages and where reconstruction work can be carried on most effectually, although the Board, so far as possible, is initiating the new work in every district affected simultaneously.

Among the measures put into effect by the Forest Board to assist in meeting the situation are those of permitting a more liberal degree of cutting to supply immediate requirements which involves an abandonment of the policy of reserving certain stock for a future date of exceptional sizes; to increase the number of young and medium trees whose annual growth is important and to sacrifice the older parks of slow growing possibilities; the utilization of all no-permanent resources; the reduction of railway transportation rates on timber in order to facilitate its movement; the greater utilization of the home-grown resinous species which in the past have been disregarded in favor of those of the Northern European countries on account of their assumed inferior quality; the working of France's colonial forests, especially those of French Western Africa, where investigation has shown, there are vast forest resources suitable for French requirements but which have formerly been ignored in preference to imports from Scandinavia; bringing into accessibility the State forests in the Pyrenees which have hitherto not been economically exploited owing to lack of transportation facilities and other causes.

Another measure, which the Board regards as of great importance, provides for State assistance in the management and development of Communal woods and forests to enable them to construct roads and other works for forest betterment, such grants to be repayable out of the net proceeds of the timber sold.

Regarding the policy of private or State ownership of forests, French authorities believe there is ample opportunity for both systems but regards reafforestation on an extensive scale as essentially work for the State, holding it to be more or less economically unsound for private capital to engage in the work.

"Development plantations, creating reserve stocks in folious forest," the Forest Board reports, "means sparing continually trees when working the forest. Private owners, under the necessity of obtaining income, cannot as a rule afford to do this properly. Such work can only be successfully carried on by the State or other perennial owner, such as Departments, municipalities, and public establishments. It is, therefore, advisable to encourage the transfer to such public ownership of woods and forests, the State acquiring preferably the poorest or most damaged whose reconstitution involves long periods of time and leaving to the corporations and private owners the forests in a normal working condition.

There is a law in France, known as the "Audiffred Law," passed in 1913, which permits and provides for private forest owners, who so desire, to entrust the State Forest Department with the entire management and administration of their forest property. Few owners, it is said, have taken advantage of the law, preferring to retain their own control, but in instances where it has been applied it is said to be working satisfactorily and the State is now engaged in propaganda intended to impress upon private owners the benefits involved in the system.

Speaking generally, the forest service of France has been in existence since 1827. The Forest Board is clothed with many powers, including the enforcement of all necessary laws and regulations. Its organization is very complete and comprises forest brigadiers, rangers, inspectors, keepers, etc., all of whom are specially qualified by practical training for their work. The Board maintains a national Forestry College at Nancy, where the higher officers receive their training, and professional forest training school at Barres (loiret) where the under-staff is educated. A research and experimental station, equipped with a wood-testing laboratory, forms part of the college equipment at Nancy, and has branches in a number of districts.

French forestry lost heavily in personnel during the war but is being rapidly rebuilt, the authorities recognizing that no department is more necessary to the present and future national welfare than that of tree culture.

REDUCED TRANSPORTATION TO NEW YORK.

Canadian members of the Society of Chemical Industry or of the American Chemical Society going to New York for the meetings and the Chemical Exposition may secure advantage of reduced rates granted by the railroads of the United States. The arrangement is that the fare will be upon the certificate plan which is in effect a charge of a fare (one way) and a half. For members in Canada this reduced fare will be applicable upon the purchase of tickets immediately upon arriving in the first city in the States across the border and will not apply to the Canadian portion of the fare. The tickets will be sold and can be used for passage upon the going portion of the ticket from September 6th and can be secured upon presentation of the Identification Certificate which will be supplied to members of these societies. As soon as members reach New York they should deposit their certificates at the Registration Desk in order that the return coupon may be validated. Members should do this even if they do not expect to return via the same route since their certificates apply upon the required quota. The return certificate is valid to reach the original starting point in the United States by midnight of September 23rd.

Certificates upon which tickets may be secured can be had upon application to C. R. Hazen, Chairman, Montreal Section; S.C.I., 84 St. Antoine Street, Montreal, or to Allen Rogers, Secretary, S.C.I., Pratt Institute, Brooklyn, New York, or to C. L. Parsons, Secretary, American Chemical Society, 1709 G. Street, N.W. Washington, D.C.

The Trunk Line Association, the Southeastern Passenger Association, the Central Passenger Association, the Western Passenger Association have all granted the special fare and the New England Passenger Association authorizes the special fare from the following points: Rouses Point, N.Y., Burlington, Essex Jct., and Rutland, Vermont, via Troy. No other New England points or roads are granting this special fare and the Trans-Continental Passenger Association will not grant special fares upon the certificate plan from the Pacific Coast because tourist fares at the same rate are already in effect.

ARBITRATORS CUT WAGES OF PULP WORKERS.

New York, Aug. 16. — Wage reductions ranging from 10 per cent for skilled men to 25 per cent for common labor today were agreed upon by the board of arbitration considering the wage dispute between union paper mill workers and elevent newsprint manufacturing companies.

The award, which fixed 40 cents an hour rate for outside common labor, affects about 12,000 workers and will become effective August, 22. The International Paper Company was not a party to the agreement.

The agreement provides for a return to the 1919 schedule of practically all classified positions above common labor and paid below 70 cents an hour, and a 10 per cent reduction on all positions receiving sixty cents an hour and over. The average reduction over the whole list is given at 15 per cent.

A slightly lower rate, it was stated, was fixed for bag factories, kraft and specialty paper mills.

The agreement will continue into effect to May 1, 1922, but is subject to reopening by either party after December 1.

The same wage scale was fixed for both Canadian and United States manufacturers.

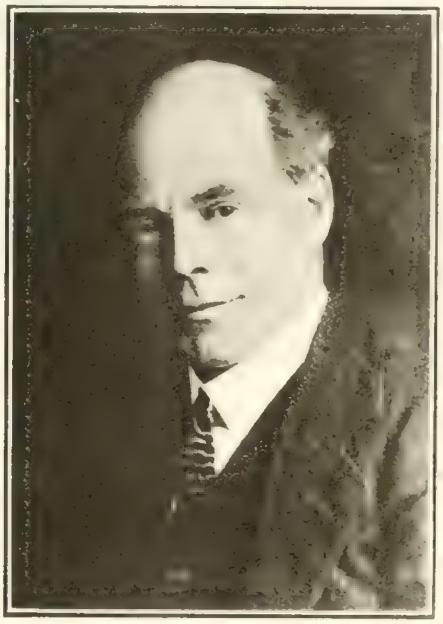
Convention of Anglo-Saxon Chemists

Final arrangements have been made for the Annual Meeting of the Society of Chemical Industry to be held in Montreal during the week of August 29th. On this, the first occasion on which the Annual Meeting of the parent society of Great Britain has been held in Canada, many of the most eminent chemists of the world will be gathered together.

The over seas delegation will be headed by Sir William Pope D.Sc., F.R.S., K.B.E., etc. Sir William Pope, president of the Society of Chemical Industry, was born in 1870 and after graduation was associated with the Manchester Gas Corporation as chief chemist for a number of years. From 1905 to 1908 he was professor of chemistry at Manchester University, since when he has been head of the department of chemistry at Cambridge. Sir William's work has been largely along the lines of Optical Activity and he is credited with the discovery of the relation between Crystal Form and Chemical Constitution. More recently he has been prominent in the public eye in connection with his most valuable work on the preparation of Mustard Gas. His researches on this product enabled the British Government enormously to increase production of this weapon in the late war. In 1919 Sir William was created Knight of the British Empire.

Other prominent figures of the party include Dr. Louis A. Jordan, Chevalier of the Crown of Italy, F.I.C., A.R.C.Sc., etc., whose work as a member of the British Mission on explosives to the Italian government is well known; Dr. Andrew Smith, Managing Director

DR. R. F. RUTTAN.



MR. FREDERIC WILLIAM GAMBLE.

DR. LOUIS A. JORDAN.

DR. W. H. NICHOLS.

MR. C. S. GARLAND.

CAPT. J. C. GOODWIN.

of the firm of Leech, Neal and Co. Limited; Dr. C. J. Goodwin of the firm of Oscra Goodwin and Sons, explosives engineers.

Dr. Frederick William Atack whose principal work has been the Chemistry of Dyes, and to whom we are indebted for the excellent translation of Professor Wahl's "Manufacture of Organic Dye Stuffs," will also be present. Dr. Atack also organized the publication of the Chemists Year Book, which is now in its sixth edition.

The Steel industry will be represnted by Dr. Andrew McWilliams C.B.E., A.R.S.M., whose experience in the management of steel works coupled with scientific researches have earned him a notable reputation among steel metallurgists.

Dr. C. S. Garland the pioneer manufacturer of Thorium Nitrate will also be a visitor.

Dr. Frederic William Gamble, director of Allen and Hanbury's Limited and Professor J. W. McBain are accompanying the party.

Among the notable visitors from the United States will be Dr. W. A. Noyes, professor of chemistry of the university of Illinois and past President of the American Chemical Society; Dr. Charles Herty, Editor of Industrial and Engineering Chemistry; Dr. W. H. Nichols president of the Allied Chemical and Dye Corporation.

There will be a general gathering of chemists from every portion of the Dominion of Canada.

The principal feature of the opening session will be the address of the retiring president Sir William Pope, which will be followed by the introduction of the President elect, Dr. R. F. Ruttan.

The succeeding two days will be confined to technical papers and discussion at both the morning and afternoon sessions with special attention to the Pulp

PROF. J. W. McBAIN.

MR. C. A. HAZEN.

DR. FREDERICK WILLIAM ATACK.

DR. MILTON L. HERSEY.

DR. ANDREW McWILLIAM.

and Paper Industry on Tuesday.

The annual banquet of the Society will be held at the Windsor Hotel on the evening of Tuesday August thirtieth. Speeches will be given by leaders in government, scientific, and commercial circles.

The Montreal program will conclude with a special convocation at McGill University, followed by a garden party which will be given by the ladies of Montreal.

On leaving Montreal the visitors will be the guests of the Shawinigan Section of the Society, where every facility will be afforded them for the inspection of the many interesting industries which have grouped themselves around Shawinigan Power development.

From Shawinigan Falls the party will proceed to Ottawa thus gining the Ottawa chemists opportunity of ading their welcome.

Leaving Ottawa Friday night the guests will arrive at Toronto the following morning where the itinerary will include a visit to the Canadian National Exhibition. An opportunity for rest will be afforded during Sunday at Niagara, followed by inspection of plants around the Falls. At noon on Monday the party will cross the International Bridge and become the guests of the American Chemical Society, who have arranged a most excellent program, including visits to Buffalo and Syracuse, and to New York via the night line down the Hudson River. At New York opportunity will be afforded them of meeting the members of the New York Section of the Society of Chemical Industry. The guests will then be privileged to attend the annual meeting of the American Chemical Society the banquet of which will be held on Friday evening. The following two days will be devoted to sight seeing and such rest as may be thought desirable to enable the visitors to enjoy the National Exposition of Chemical Industries during the week of September twelfth. This expo-

MR. H. W. MATHESON.

MR. ANDREW SMITH.

MR. THEO. H. WARDLEWORTH.

sition is unique and forms a fitting climax to the tour.

The Montreal programme is as follows:—

PROGRAM OF THE ANNUAL MEETING OF THE SOCIETY OF CHEMICAL INDUSTRY AT MONTREAL AUG. 29 to 31, 1921.

Monday, Aug. 29th.

Morning
9-10 a.m.—Registration.
10 a.m. Council meeting at McGill University.
11 a.m. Annual meeting.
a. Address of Welcome.
b. Reply.
c. General Business of the Society. Annual Address. Sir William Pope.
Afternoon—
1 p.m. Lunch at Ritz Hotel, given by Montreal Section.
3 p.m.—Special visit to Macdonald College, tea and garden party.
Evening—Private Dinners.

Tuesday, Aug. 30th.

Morning—
10—10 : 30.—a. Address—Dr. Lash Miller.
10 : 30— 1.—b. Paper on "The Problems Encountered in the Development of the High Speed Paper Machines at the Laurentide Co. and their Solution"—Mr. Geo. D. Kilberry.
c. Solubility of Cellulose in Thiocyanates.
d. Moving Picture of Wood Operations and the Manufacture of Paper at Price Bros. Paper Mill.
Afternoon—
1 p.m.—Luncheon at Windsor Hotel, given by the Montreal Section.
3 p.m.—Paper on Manufacture of Hydrogen Peroxide,—Dr. Otto Maass.
Peat.—Dr. E. P. Moore.
Lignite Briquetting.—Mr. Leslie R. Thompson.
Evening—
7 : 30 p.m.—Banquet at Windsor Hotel. Speeches.

Wednesday, Aug. 31st.

Morning—
10 a.m. —Papers.
Heat Intercepting Glasses. Dr. Gelert Alleman.
The manufacture of C. P. Chemicals at the Eastman Kodak Co. by Dr. C. E. K. Mees.
Rubber Resins—Dr. G. S. Whitby.
Afternoon—
1 p.m. -Luncheon at Windsor Hotel given by Montreal Section.
3 p.m.—Special Convocation at McGill and Garden Party.
Evening
7 p.m.—Private Dinners.
11 : 55 p.m.—Leaving for Shawinigan Falls.

A general announcement has just been received of the third International Samples Fair at Prague, Czechoslovakia, Sept. 1-8. Paper will be an important article among the exhibits, as Czechoslavakia embraces 65% of the pulp and paper industry of what was Austro-Hungary.

BRITISH TRADE NEWS.

London, Aug. 2, 1921.—There is a plentiful supply of coal now in the British mills, both Canadian and local and the order is "full steam ahead" as the orders roll in. Unfortunately, however, trade is very dull, small orders are being received, and attention is mostly directed to the export trade, the home consumption being reduced to a nicety. On the other hand supplies from the continent continue to arrive in bulky quantities.

Wages Question.

It is officially announced that the wages dispute in the paper industry is now definitely settled with the acceptance by the Unions of the recommendations made by the Joint Industrial Council. Everything now depends on the rise and cost of living for future arrangements. Credit, however, must be given to the Papermakers' Federation for the democratic and intelligent way they handled negotiations with the workers, an example which might well be followed by other industries.

Felt the Depression.

Much pleasure was expressed at the presence of Mr. Frank Lloyd, the chairman of Edward Lloyd, Ltd., who presided at the annual meeting the other day. He is not often seen in London, but whenever he is his presence is gladly welcomed wherever he goes. Speaking to the directors and shareholders, Mr. Lloyd said they all knew that the present time was a bad one for British trade generally, and the paper trade was feeling the result of the severe depression as acutely as most others. Under the circumstances, the directors did not feel that it would be prudent to recommend a further distribution of more than 1¼ per cent. on the ordinary shares, making a total of 5 per cent. for the year. With regard to, 1921, the prospects were far from encouraging, the consumption of paper of all kinds having fallen off to an unparalleled extent and the protracted coal strike had the effect of still further curtailing the demand. In common with other industries they were feeling the effects of the abnormal and varying rates of exchanges and also the reduced demand for paper in consequence of the consumption by publishers of the heavy stocks they held at the close of 1920. These stocks had now been brought down to a low level, and there were signs of revival in the near future. Then added Mr. Lloyd: "Owing to our conservative policy in the past, we have confidence in the company emerging in a strong position, and as soon as the foreign exchanges have become stabilized, being able to meet competition from all sources as we have done in the past. During the past year the men have settled down to the 3-shift system, and we have no doubt we shall soon make good the ground we have lost during the war compared with countries which were not so deeply affected as we were."

The Pulp Trade.

Since the conclusion of the coal strike and more settled conditions in the labor market, a notable improvement is recorded in the business in pulp. Some large supplies of groundwood and unbleached sulphite are arriving from Canada and Sweden has also come to the fore with good shipments. As things stand at present the outlook is very promising, but it must be remembered there are still large stocks in the British mills to be worked off, these having accumulated owing to the recent strike and decreased demand for paper.

Prices are nominally as follows: Bleached sulphite £22.10; Easy Bleaching No. 1 £19; Sulphite newsprint quality, £17; Unbleached Soda £21; Soda Kraft £18, groundwood (wet) £5; groundwood (dry) £9.

UNITED STATES NOTES

Through a recent merger with the Wright, Barrett & Stilwell Company of St. Paul, Minn., with the Whitaker Paper Company of Cincinnati, the latter company—already one of the country's largest jobbing houses is extending its activities to the Northwestern field. A. L. Whitaker, president of the company, Bryant Venable, its secretary, and other officials were on hand to address a banquet held to celebrate the consolidation at the Hotel St. Paul in the Twin City a little over a week ago.

The new plant of the Paper Converting Corporation, Niagara Falls, N. Y., has been completed and is ready for operations. This mill, which is up-to-date in every particular, will employ about 150 operatives at the start. Its products will consist of special papers for food products such as waxed bread wrappers and other waterproof papers and tissue paper for fruit wrapping. The mill contains two 132-inch machine-glazed paper machines. The converting building contains a waxing department, printing presses, ink makig, plate making and finishing departments. The officers of the company are: M. A. Wertheimer, president; F. J. Sensenbrenner, vice-president; K. E. Stansbury, treasurer; G. L. Giddings, secretary and general manager.

The Remington Paper and Power Company of Watertown, N. Y., has been sued for $1,510,000 damages for alleged breach of contract to deliver newsprint by the Sun Printing and Pubishing Company of New York City. According to the complaint, the paper concern is alleged to have contracted to sell the Sun Company 16,000 tons of print paper but delivered only 4,000 tons, declining to deliver any of the remainder following a rise in the market price. The plaintiff was therefore, it is claimed, compelled to buy paper in the open market, paying for it as high as 11¾ cents a pound. The complainant asks $910,000 for non-delivery of the paper and special damages of $600,000 in addition because the Sunday and daily editions of the Sun had to be curtailed and inferior paper had to be used causing a loss in income.

In a similar suit, now being tried before Judge Knox in the United States District Court, New York City, the Commercial Advertiser Association, publishers of the New York Globe, won a point last week when the defendants, the International Paper Company, were denied a motion for a bill of particuars. In its complaint, the plaintiff concern asked for $500,000 for loss of circulation and advertising because of alleged failure to live up to a contract to provide the Globe with sufficient newsprint for its needs. It is also charged that the defendants violated the Sherman Anti-Trust act by creating a monopoly in restraint of trade. Judge Knox, in denying the motion, held that "it is of little consequence whether the detalis and means by which the things alleged were done are particularly called contracts, combinations, conspiracies or attempts to monopolize trade and commerce; if the defendants, taken as a whole, can be shown to have unlawfully engaged in the practices charged.

Charles Drury Jacobs, recognized as one of the industry's leading experts on shaded watermarks and standardized lines, is severing his connection with the American Paper Mills Company to go into business for himself as a dealer in high grade papers. Mr. Jacobs established in 1914 what is known as the "Drury Standardized Lines," and he obtained also at that time patents on the "Drury" shaded watermark. he idea of standardized lines, is severing his connection with the highest possible indorsement when the War Industries Board limited the manufacture of bond and writing papers to five different grades. Mr. Jacobs plans to continue the work in which he has been interested and to this end he has become associated with another authority on shaded watermarks, W. E. Grout. Mr. Jacobs' headquarters will be at 213 Lafayette Street, New York City.

Federal and State forestry experts have begun a study of forestry conditions in Michigan with a view to collecting data for use in the formulation ofa reforestation program for the state. Raphaal Zon, W. N. Sparhawk and W. D. Brush, of the Federal service have conferred with Prof. A. K. Chittenden, and have gone with the latter into the former lumber regions to investigate conditions there. It is expected they will be thus engaged for several months.

Recent labor troubles at Corinth, N. Y., where there were outbreaks several weeks ago in connection with the strike of International Paper Company employees, have led to the filing of charges against Col. R. R. Gillet, of the New York State Guard. An inbestigation of the latter's conduct during the strike difficulties has been ordered by State Adjutant General Kincaid, J. T. Carey, president of the International Paper Makers, who is preferring the charges, alleges that Col. Gillet not only conducted himself in a manner unbecoming an officer, but also that he used the property of the State in the interest of a private corporation by having stationed at the armory in Troy subordinate officers who acted as employment agents to secure strike-breakers. The allegation is backed by affidavits of about thirty men who volunteered at Troy to go to work at Corinth.

Because of a let-up in the demand for book papers the Niagara mill of the Kimberly-Clark Company is now making print paper. As there have been no arrangements in the plant to change its product permanently, it is believed that book paper will be manufactured again as soon as the market picks up.

Forest fires that at one time threatened 750 lives in one town, swept through parts of Maine last week, wreaking the greatest destruction near Howland, which is at the junction of the Piscataquis and Penobscot Rivers. The fire near Howland swept north and east along a twelve mile front and continued to blaze for several days until finally checked by heavy rain on the night of August 7. While the fire was at its height, fire hose from several neighboring towns and villages was brought into play to wet down thousands of cords of pulpwood owned by the Advance Paper Bag Company which threatened to give the flames a stronger foothold. Fires in other sections of the United States, the largest of which were at Escanaba, Mich., and in the Adirondacks, New York, were also halted by rains following heavy damage. The loss caused by the Michigan blaze is estimated at 1,000,000

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Estimation of Pectin Bodies. FELIX EHRLICH, **Paper**, xxviii, 4, (March 30, 1921). Brief outline of the chemistry of pectins, of the qualitative tests for detecting pectin, and of various determinations which may be used for its quantitative estimation (Tollens' pentosan dermination, determination of methyl pentosans, determination of galactose and galacturonic acid, determination of methyl alcohol easily removed by alkali) including the scheme of analysis which the author has found most satisfactory for determining for technical purposes the total amount of pectin and its decomposition products. Further research is required along this line of work.—A. P.-C.

A-3. Sunflower as Source of Paper Pulp. RAYMOND FOURNIER, **Papeterie**, xliii, 242-9 (March 25, 1721). The sunflower is briefly described, and also its utilization as a source of oil. Laboratory tests were made at the Paris Chamber of Commerce to determine its suitability as a source of paper pulp and gave the following results: the stems were cut into small pieces and subjected to treatment with caustic soda and bleaching powder in the usual manner; the caustic caused a very decided yellowing which could not be removed by bleaching with bleaching powder, and, moreover, the mechanical separation of the fibers was difficult. The yield of air-dried fiber was 42.6 percent before, and 34.6 percent after treatment with bleaching powder. By using a 10 percent sodium peroxide solutiontion instead of caustic soda, a whiter and more easily defibered pulp was obtained; it was, however, still quite difficult to defiber. The yield was 48.5 percent and 36.7 per cent after bleaching. Microscopic examination of the pulp showed the cellulosic fibers to be covered with a lignified tissue. The fibers are 0.640-0.820 mm. long, average 0.730 mm. The thickness is fairly constant and is about 0.022 mm. More satisfactory results would probably be obtained on a mill scale. Small scale tests carried out at the mill have shown that sunflower can be pulped by means of existing equipment. The stems were washed, cut into lengths of about 2 to 3 cm., cooked for about 30 minutes in boiling water, and crushed between rolls rotating at different speeds. It is then cooked (without pressure) with a liquid containing 10 to 12 per cent of caustic soda (on the weight of the air-dried material). After the cook the material is washed first with hot and then with cold water. The unbleached pulp thus obtained may be used as such, and is decidedly superior to mechanical woodpulp. It can be bleached (but not to a pure white) by the usual methods. The yield varies from 30 to 40 percent (average 35 percent) according to the state of maturity when cut, the length of time kept in storage, the concentration of the cooking liquor, the time of cooking, and the method of bleaching.—A. P.-C.

A-3. Manufacture and Consumption of Esparto Pulp in France. E. ARNOULD, **Papier**, xxiv, (April, 1921). Owing to the present shortage of raw materials and high prices of all imported pulps ,it has repeatedly been suggested that the French make the most of their immense reserves of esparto and replace much of their imported pulp by means of esparto pulp which could be prepared to a certain extent in Africa. When prepared by the so called English process esparto pulp possesses certain valuable characteristics (suppleness, fineness, elasticity, inertia, opacity, bulk, case of sizing, felting qualities, printing qualities, etc.), but it lacks strength and should be used essentially as a filler. Its use is thereby limited to a great extent, and it cannot be made to replace the strong chemical woodpulps which are imported in large quantities from Scandinavia. By means of Arnould's patented process (Fr. patent No. 118,376. See **Pulp and Paper** xviii, 836, K-6, Aug. 5, 1920; 97-8, Sept. 2, 1920) a much greater yield of a strong, high quality pulp is obtained at a considerably lower cost.—A. P.-C.

A-3. Vine-shoots for Paper Pulp. CH. GROUD, **Papier**, xxiv, 114-6 (March, 1921). Botanically vine-shoots are closely related to wood, and they should be subjected to a treatment similar to that of wood. Laboratory samples were prepared by treatment with diluted nitro-hydrochloric acid. The pulp thus prepared was composed almost exclusively of cellulose fibers of length 1 to 1.75 mm. diameter about 0.02 mm., ratio of length to diameter, 87 to 50. Commercial tests were carried out in 1912 at the French School of Papermaking at Grenoble. Pulping was done by the soda process and the pulp had all the characteristics of a good soda woodpulp. It consisted of ligneous fibers (length 0.5 to 1 mm., average 0.8 mm.; diameter 0.02 to 0.025 mm.) and of liber (?) fibers (length 1.5 to 2 mm., diameter 0.015 to 0.02 mm.). The pulp is deemed suitable for the manufacture of fine and ordinary print papers. The treatment is easy and the yield is about 30 per cent. France (exclusive of Algeria) produces enough vine-shoots to furnish 720,000 tons of pulp yearly.—A. P.-C.

A-4. Chemical Composition of Woodpulp. CARL G. SCHWALBE and ERNST BECKER, **Z ellstoff. Abhand.**, i, 2 (July 15, 120); **Paper**, xxvii, 25 (Feb. 23, 121). Analyses of fifty-seven different pulps are tabulated, comprising the following determinations: moisture, ash, copper no., corrected copper no., copper hydroxide no., furfural, pentosans, neutral wood gum, methyl no., alpha-cellulose, and lime or baryta-resistant. The pulps are divided into six groups: unbleached soda, unbleached Mitscherlich, unbleached Ritter-Kellner, bleached pulps, "Edel pulps" (pulps specially purified for chemical use), and special pulps. The analyses for each group of pulps are averaged, and the analyses of pine wood, of beach wood, and of cotton for nitrating are given for the sake of comparison. The results of analyses are discussed. A. P.-C.

A-10. Reasons for Faulty Sizing. E. ARNOULD, **Papier**, xxiv, 108-10 (March, 1921). The presence of only 0.043 percent sodium chloride in the pulp may completely prevent sizing by the usual rosin-alum method. The mechanism of the action is not understood, but depends on the action of the crystalloid NaCl on the colloid resin. The sodium chloride must be removed from the pulp. Washing is ineffective because the salt is adsorbed by the cellulose. Dilute sulphuric should not be used as there is danger of traces of hydrochloric acid remaining in the pulp which would again form sodium chloride. Dilute caustic soda will dissolve it out and must then be completely removed by very thorough washing. A. P. C.

A-14; K-18. Effect of Age on Bursting Strength of Corrugated Fiber Board. J. D. MALCOLMSON, **Pulp and Paper,** xix, 435 (April 21, 1921). About seventy samples of corrugated boards made from 1910 to 1916, which had been procured and tested in 1916, were recently retested under the same conditions as the first time. The results of the two series of tests indicate: (1) the average of seventy-one samples showed a decrease in the Mullen test of only 1 percent in four years; (2) chemicals, such as silicate of soda and sizing, had no noticeable effect on the final strength of the boards; (3) deterioration is roughly proportional to the amount of groundwood present (which has also been found to be true in the case of ordinary paper); (4) board containing a large amount of new kraft or sulphite fibers often shows an actual increase in strength.—A. P.-C.

A-15. Methylation of Cellulose. III. Homogeneity of product and limit of methylation. W. S. DENHAM. **Chem. Soc. Trans.,** cix, 77-81, 1921; **J. Soc. Chem. Ind.,** xl, 211A (April 15, 1921). (**Cf. J. Soc. Chem. Ind.,** xxxii, 974, 1913: xxxiii, 1084, 1914.) Highly methylated celluloses were obtained by treating cotton with sodium hydroxide solution and then with methyl sulphate, and repetitions of this process, variously modified, have yielded a product containing 44.6 percent of methoxyl, a value approximating to that theoretically required for trimethyl cellulose. This is regarded as the limit of methylation and, as far as could be ascertained from its behavior to Schweitzer's reagent, in which it was quite insoluble while lower methylated celluloses were partially soluble, it was apparently homogeneous.—A. P.-C.

A-15. Solubility of Cellulose in Salts of Alkali and Alkaline-Earth Metals. R. O. HERZOG and F. BECK. **Z. physiol. Chem.,** cxi, 297-92 (1920); **J. Soc. Chem. Ind.,** xl, 254A (April 30, 1921). The solubility of cellulose in concentrated solutions of alkali and alkaline-earth salts is a function of the ions of the respective salts. The ions may be arranged in the following (ascending) order: NH_4, K, Na, Li; Ba, Sr, Ca; $\frac{1}{2}SO_4$, Cl, Br, I, CNS. In experiments with raw and purified cotton, cotton wool, woodpulp and hydrocellulose, no swelling or solution occurred in solutions of chlorides, bromides, nitrates, sulphates, thiocyanates, acetates, and lactates of sodium, potassium, ammonium, and magnesium, barium and strontium bromides and barium thiocyanate. Calcium nitrate attacked the cellulose. Swelling without disappearance of structure occurred in solutions of potassium iodide at 120° to 140° Cent., and of alkaline-earth idoides at 120° to 150° Cent. Solution of the cellulose took place in solutions of sodium iodide, lithium chloride, bromide, iodide, and potassium-mercuric iodide. "Commercially pure" calcium chloride will dissolve cellulose if the dilute solution be first neutralized with N/100 hydrochloric acid and then concentrated.—A. P.-C.

A-15. Distillation of Starch and Cellulose under Reduced Pressure. A. PICTET and J. SARAZIN. **Helvetica Chimica Acta,** i, 87 (1918); **Paper,** xxviii, 6 (April 13, 1921). Translation by HAROLD HIBBERT, Yale University. See **Pulp and Paper,** xvii, A-15 (May 29, 1919).—A. P.-C.

A-16. Investigation of Special Bronzes. F. GIOLITTI and M. MARANTONIO, **Gazetta Chemica Italiana,** xl, I, 51-77 (1910); **Pulp and paper,** xix (April 14, April 21, April 28, 1921). Bearings are often made of lead bronzes containing about 10 percent tin and up to 20 percent lead. The cooling curves of twenty-six such alloys (from 1 to 24 percent tin and 1 to 20 percent lead) were studied and the structures of the alloys examined under the microscope. The usual equilibrium diagram was plotted. As the tin, in the region investigated, is present in composition with copper ($CuSn_4$, $CuSn_3$ and their solid solutions) and the copper-tin diagram is known, it remained but to determine the copper-lead diagram, which was done. The two metals form no compound with each other, are only partly miscible in liquid form, not at all in the solid state; the eutectic point practically coincides with the melting-point of lead. The results obtained with the ternary mixtures are fully discussed. Lead does not markedly effect the hardness of bronzes containing less than 14 percent of tin; in bronzes containing more than 14 percent tin, the hardness decreases rapidly with increase of lead (especially when the amount of lead is less than 5 to 6 percent. A. P. C.

A-0; N-4. Indicators for Carbon Dioxide and Oxygen in Air and Flue Gas. L. H. MILLIGAN, D. O. CRITES and W. S. WILSON, U. S. Bureau of Mines, Tech. Paper 238, 1920, 21 pages. **J. Soc. Chem. Ind.,** xl, 199A (March 31, 1921). Apparatus has been devised for the testing the air for carbon dioxide and oxygen and of flue gas for carbon dioxide, which is portable, reasonably accurate, and capable of use by any person without chemical training. The first gives an accuracy of ±0.2 percent CO_2, and the latter two of ±0.5 per cent CO_2 or O_2. The carbon dioxide indicators are familiar principles employing a caustic soda solution as adsorbent but incorporate the following points: the gas is saturated with water vapor by drawing it in through moist cheese cloth. The absorption of carbon dioxide during the taking of the sample is prevented by a layer of Russian "white oil" (liquid petrolatum) on the caustic soda in the sample chamber. In the calibration of the scale corrections are made, for the aqueous vapor adsorbed by caustic soda and for diminution of pressure due to adsorption of carbon dioxide. In the case of flue gas a filtering and cooling arrangement for the gas is provided. In the oxygen apparatus alkaline pyrogallate is used as absorbent and the air is dried and freed from carbon dioxide by passing through a tube filled with soda lime and calcium chloride. Numerous comparative tests with the indicators and with the Haldane and Orsat apparatus are given.—A. P.-C.

A-0. Technical Gas Analysis. M. MOLLER, **Wiss. Veroffentl.** Siemens Konzern, i, 147-53 (1920); **Chem. Zentr.,** lxxxxii, ii, 210-1 (1921); **J. Soc. Chem. Ind.,** xl, 198-9A (Mar. 31, 1921). A method of technical gas analysis, especially for the determination of hydrogen, carbon dioxide, and methane, is based on the difference in the respective thermal conductivities of certain gases. Carbon monoxide, nitrogen, and oxygen are not differentiated from one another by the method, which is based upon the different cooling effects experienced by two exactly similar heated wires carrying a current and contained respectively within one of two exactly similar very narrow cylindrical metal chambers and surrounded respectively by the gas to be investigated and a standard gas.—A.P.-C.

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PULP AND PAPER NEWS

The striking printers in Toronto are up in arms against the alleged boycott, by the employers, of shops which have conceded the forty-four hour week. On Friday last, a deputation representative of the strikers waited on the Hon. W. E. Raney, Attorney General of Ontario, and took official objection to the action of employers in refusing to send work to shops conceding the forty-four hour week, and in asking all employing printers to give support to a resolution of this kind, on the ground that it was in restraint of thade. The Attorney General was asked to take action, and he promised consideration. The deputation also had an interview with the Hon. R. H. Grant, the Ontario Minister of Education, but no announcement was made as to the nature of the subject under discussion at this interview, although some members of the deputation said that there would be "some developments" within the next few days.

In connection with all the interview of the strikers with Mr. Grant, the Minister of Education, it should be mentioned that the Department of Education has a special interest of its own in the strike and its effect on the printing industry. For it is possible that the strike may delay the preparation of the school text-books required by this Department for the autumn term which will shortly be commencing. In fact, it has been arranged to continue for another year the use of the old geography, which it was intended should be superseded, owing to the impossibility of completing the new one in time for use next month. All the chief publishers of school text-books in Ontario are effected by the present strike, but Mr. Grant says that they are doing their utmost to meet the fall requirements of his Department. He adds that, some months ago, efforts were made to secure as large stocks as possible of the books most essential to the work of the Ontario schools. From the figures supplied by the publishers within the last few days, there is reason to believe that there are sufficient supplies of all the school readers, the public school arithmetic, and, in fact, all the public school books generally, except the geography. "The new public school histories," says Mr. Grant, "will be somewhat delayed by the strike, but no stone has been left unturned to secure adequate supplies of both public and high school books. The new high school books, the composition, the French reader and the newly-authorized elementary biology books have been delayed by the strike, but it is expected that they will all be ready for the schools early in the autumn term, and probably during September."

The Convention of the International Typographical Union, held in Quebec City last week, was somewhat marked by a series of rather sordid squabbles about the expenses of officials and cognate matters. But, in its determination to stand out for the forty-four hour week, the Convention was a unit. In passing, it may be mentioned that the Convention of the Brotherhood of Railway Carmen, which was in session all last week, in Toronto, also went on record as in favor of the forty-four hour week, although it is significant that one delegate demanded a six-hour day, while another asked that the program of the organization fix the working day at *four* hours!

A feature of the Typographical Convention at Quebec was a speech by Mr. J. E. Atkinson, President of the Toronto Star, representing the Canadian Daily Newspaper Association. Asserting that a contest was now being waged against the principles of unionism by a powerful body of employers, he asked whether, in view of changed conditions, it was not wise for leaders of labor to reconsider their policy. Mr. Atkinson laid emphasis on the fact that there was only one alternative to arbitration — force, which had never gained the advantages for the workers that had been secured by arbitration. He said that it was surely wisdom not to strike in the face of a falling market. As a friend of organized labor, he would be disappointed if the Typographical Union could not adjust its differences with the employers without attempting to establish the doctrine that might was right.

The Hon. Beniah Bowman, Ontario Minister of Lands and Forests, visited the Kenora district last week, and observed that he was pleased to remark that the Backus, Brooks Company, was endeavouring to carry out its agreement with the Ontario Government, notwithstanding the present difficulties regarding power development. It may be mentioned that a pretty hot campaign against the so-called "Backus deal"—which Premier Drury, as was mentioned last week, stoutly defends—is being waged by one of the Toronto papers.

A meeting of all the creditors of the Riordon Company, Ltd., is scheduled to take place tomorrow, the 19th instant, at the Windsor Hotel, Montreal. The letter sent out to the creditors, advising them of the meeting and requesting their attendance, states that "the financial houses interested in the securities of the Riordon Company are now discussing a new plan of financing, which it is hoped will be laid before you at this meeting." The nature of this plan has not transpired, and, while many rumors are afloat, circles usually well-informed in such matters take the view that it will turn out to be one by means of which it may be possible to raise between $8,000,000 and $9,000,000, largely from Canadian sources. It should be added that it is stated, on what is claimed to be good authority, in Ottawa that the Edwards Company and the Gilmore-Hughson Company have agreed to an extension of time for payments from the Riordon Company on the purchases of the Gatineau and other properties. If this is the case, such extension should afford scope for further attempts to finance the Riordon concern. But, meanwhile, it is necessary for the concern to carry on, and the question as to how long it can continue to do so, under present conditions, is one which is being widely canvassed.

Mrs. E. B. Eddy, widow of the late President of the E. B. Eddy Company, Ltd., of Hull, and a widely-known philanthropic worker, died on Tuesday of last week at the age of fifty-six years. She was married to Mr. Eddy twenty-seven years ago in Halifax, N.S., and a few years later the deepest interest in his huge mills in the district, becoming after Mr. Eddy's death, a director of the concern. Death and interment were at Chatham, N.B., her old home. The huge mills of the company, employing about 2000 persons were closed the day of the funeral.

The general rains which, on Monday of last week, swept over the districts of Nova Scotia and New Brunswick where forest fires were raging terminated the long battle which had been waged between the fires and the fire-fighters, in those regions, in favor of the latter. But not before the fires had attained such dimensions as to constitute the worst series that have ever visited the Maritime Provinces. Fortunately, no lives were lost, but scores of square miles of highly valuable forest and farm lands were devastated, and many hundreds of thousands of dollars' world of property was completely destroyed. The villages of Ononette, Hillandale and Lingley and the regions around Westfield and South Bay, in New Brunswick, are said to present scenes of utter desolation.

Mr. G. T. Clarkson, of Toronto, is the receiver appointed by the Courts for the Mattagami Pulp and Paper Company, Ltd. The Imperial Bank of Canada is plaintiff in an action to recover $59,199 alleged due on overdrawn accounts, and other creditors had issued writs. To many people, the news of the appointment of a receiver for this concern came as a surprise, as the fact that it had just recently resumed operations at its plant at Smooth Rock Falls, Ont., seemed to indicate that prospects ahead of it were brightening. The Company was incorporated five and a half years ago and owns 125 square miles of freehold timber limits as well as controlling by lease from the Ontario Government 840 square miles of Crown timber lands. Its lands, limits, mill properties, water powers, etc., are valued in the last report at upwards of $9,000,000. The capitalization totals $3,500,000 capital stock. The bonded indebtedness includes $2,500,000 seven per cent convertable debentures stock and $1,814,743 first mortgage six per cent, gold bonds.

Leading representatives of the paper industry met at Montreal last week to consider the effects of the Fordney tariff on the industry. Certain clauses in the Fordney bill look likely to be operated in a discriminatory manner — or, at any rate, as a lever to force the removal of the embargo on the export from Quebec and Ontario of pulpwood on Crown lands in unmanufactured form.

After being shut down for a few weeks, the Canada forge plant of the Canada Foundries & Forgings Limited, has been re-opened to take care of heavy requirements for the pulp and paper trade.

Mr. Guy Tombs has returned to Montreal from a holiday in Nova Scotia.

Good progress is reported on the construction of the new groundwood pulp mill near Haileybury, Ont., but it is understood that the machinery has not been purchased as yet.

In connection with the financial situation of the Mattagami Pulp and Paper Co., a letter has been sent to bond and debenture holders, setting forth the principal assets and liabilities. It is evident that there is ample security for the money invested, and only a revival of paper industry which consumers high grade pulp is required to make operations worth while.

Grand Mere won the Garneau cup from the Quebec aggregation, 54 to 12. Twenty-five players represented each club.

Mr. T. C. R. Crawley and J. S. Wilson, of Dryden Paper Co., Dryden, Ont., have been elected to full membership in the Technical Section of the Canadian Pulp and Paper Association.

Mr. Wm. Linehan of the Canadian Export Paper Paper Company, is spending a vacation period at Glens Falls, New York.

Preparations are being made by the New Brunswick government to investigate the reported discovery of gas and oil near the dam of the Fraser Companies, Limited, at Edmunston. The government will, in accordance with the statute, pay cost of exploration work, and it is the intention to secure the services of experts and if it proves promising, to proceed with development work.

The movement of shingles and copper from British Columbia to the Atlantic ports via the Panama Canal is continuing. Every week about ten million shingles are shipped, and a thousand tons of copper go monthly. Recently paper and pulp has been added to the list.

The value of lookout towers for the prevention of forest fires has been fully recognized by the New Brunswick government and plans are under way for the erection of four additional lookout towers as soon as possible. Many new fire preventive measures have been adopted and it is planned, if possible, to do away with spring burning of brush. Fall burning is to be encouraged.

A party of influential newspaper publishers from the United States, accompanied by Mr. A. L. Dawe and Mr. Geo. F. Steele visited Grand Mere this week and saw the Laurentide wonder machine making newsprint at more than 1000 feet per minute. A very enjoyable trip is reported.

Mr. Geo. F. Steele, manager of the Canadian Export Paper Co. is at Watkins, N. Y., getting a much needed rest.

VISCOSE OPENS NEW PLANT.

The Viscose Company has opened its new $1,000,000 plant at Lewiston, Pa., which it is stated will have a production of about 6,000 pounds of artifical silk a week by the end of this month and will probably work up to a production of 80,000 to 85,000 pounds a week.

The company is also getting ready to put into operation its expansion plans for the plants at Roanoke and Marcus Hook, Va. The capacity of the one will be doubled, while a new unit will be added to the other

PULPWOOD COMMISSION

The joint resolution providing for the appointment of a commission to confer with the Dominion authorities as to the restriction of the export of pulpwood from Canada went to the White House last Wednesday. It is expected the President will name the commission at an early date.

COURTESY.

Courtesy within an organization is as vital as lubrication within a motor. Both overcome friction.

Intermittent courtesy to the public and not among ourselves, or vice versa, is no more sufficient than intermittent lubrication. To get maximum results we must jointly serve each other and the public

THE BRITISH PAPER TARIFF.

Efforts are not failing to get paper included in the Safe-Guarding Industries Bill. Questions have been been raised in the Imperial Parliament about the position of paper, but nothing has been decided yet.

(Continued from page 863)

A-0. Apparatus Errors in Volumetric Analyses. VERNEY SCOTT, **J. Soc. Chem. Ind**, xl, 63 5T (March 31, 1921). It is shown that 0.4 percent may be taken as a fairly representative average of the maximum errors which may arise, caused solely by apparatus errors. The errors from other sources are briefly indicated and the author expresses the opinion that a minimum estimate of these errors would be 0.4 per cent; while for a maximum estimate probably twice or three times the minimum would be fairly reasonable. He admits that this is a debatable conclusion. A. P. C.

B-3. Burning of Dead and Down Trees as a Practical Protection Measure. R. B. WEAVER, **J. For.**, May, 1921, p. 506. C.L.

B-3. Controlling Insects in Logs by Exposure to Direct Sunlight. S. A. GRAHAM, **J. For.**, May, 1921, p. 512. C.L.

B-4. Paper Industry and Pulpwood Supply. R. S. KELLOGG. **J. For.**, May, 1921, p. 495. Summarizes existing situation with regard to pulpwood supplies in the United States, and discusses the feasibility of extensive planting to overcome shortage. Assumes a cost of $15 per acre for land and stocking of it with young trees either through planting or natural production; an annual protection charge of 5 cents per acre; 6 per cent compound interest on the investment; favorable taxation, and a yield, under good conditions, of twenty cords per acre at the end of forty years. On this basis, the cost of growing pulpwood stumpage would be $10 per cord. Concludes that there is a real basis for belief on the part of foresters; that the time has now arrived when they can demonstrate to hard-headed business men that in forestry and not destructive logging lies the future of the great industry of paper-making. C.L.

B-5. Personal Equation in Brush Disposal. K. E. KIMBALL, **J. For.**, May, 1921, p. 515. Shows that where the men are in sympathy with the work, slash can be effectively disposed of at a cost which is not prohibitive. "It makes all the difference between efficiency and moderate costs and inefficiency and high costs whether the men doing the work of brush disposal have their hearts in the work or not." C.L.

B-9. Wood-using Industries in Sweden. Papeterie, xliii, 253-61 (March 25, 1921.) Review of the development of the wood using industries in Sweden. A.P. C.

B-0. Influence of the Forest on the Flow of Streams. Anon. **Rev. Sci**: **Papeterie**, xliii, 270 (March 25, 1921). Tests were carried out in Switzerland during the years 1903 to 1917 in two vales at an altitude of about 100 meters, one of which was almost completely wooded while the other was only about one-third wooded. They each had an area of about 6 hectares. The wooded vale received only 3 percent more moisture than the other. The flow from the latter after storms was 3 per cent higher than that from the former, but during normal rainfall it did not differ. The differences in the methods of evaporation had no influence on the flow. In the wooded vale 35 per cent of the water is evaporated by the plants and 5 percent from the soil, while in the slightly wooded vale 16 percent is evaporated by the plants and 24 percent from the soil. Hence in both cases 60 per cent of the precipitated water went into the streams. In spring, however, the snow melts more rapidly on the bare land. According to the observations of R. Engler 2.220 cu. m. of material per hectare per year is washed away from the slightly wooded land, and only 0.840 cu. m. from the heavily wooded land. It would thus seem that the forest has no influence on the flow of streams, beyond merely stabilizing it at the time of the spring thaw; but it does diminish about 50 percent the amount of material washed down. It exerts no appreciable influence on the rainfall. These results are applicable only to minor altitudes.—A. P.-C.

E-1. Titration of Sulphite Liquors. RUDOLF SIEBER, **Zellstoff. Abhand.**, i, 3 (1920); **Paper**, xxviii, 5 (April 6, 1921). The various methods proposed for determining the degree of digestion of sulphite pulp are reviewed. A method consisting in measuring the amount of chlorine absorbed by the pulp under given conditions is proposed for mill control. The results of this test and of Richter's and Klason's tests on twenty-five samples of pulp are given showing that on the whole the results of the three methods agree fairly well. The results are merely comparative and should be used for comparing the degree of digestion only of pulps on the same nature. A. P. C.

H-4. Marsh Electrolytic Cell for Chlorine and Caustic Soda. CLARENCE W. MARSH, **Can. Chem. and Met.**, v (Feb., 1921); also **Chem. Met. Eng.**, xxiv (May 11, 1921. Description of the Marsh electrolytic cell for the production of chlorine and caustic soda, and of its merits. The cell contains a series of horizontal cylindrical graphite anodes arranged in vertical or inclined position one above the other, perforated, corrugated sheet steel cathodes arranged so as to conform closely to the surface of the anodes, and asbestos paper diaphragms clamped tightly to the edges of the cathodes. Arrangements are made for collecting both hydrogen and chlorine. Single cells are made to take up to 2,500 amperes. The ampere efficiencies over long periods amount to 90 percent; the power efficiencies to 50 to 65 percent. Owing to the frequent intervals between the anode elements fresh brine is always present between the electrodes ,so that the brine is always saturated. The polarization due to the gases is minimized because the shape and arrangement of the electrodes throw the gases back and away from the active zone. The internal resistance due to the accumulation of gas bubbles is almost entirely removed, so that the voltage is the lowest that could be obtained in a cell of minimum height. Owing to the manner in which the anode elements are placed in the corrugations of the cathode, the entire surface of the anodes becomes active. As a result the voltage is low and very uniform so that the wear on the graphite is uniform over the whole surface and is confined to the active surface, the leading-in posts showing very little wear. The wear of the anodes is much reduced, so that the amount of graphite deposited on the diaphragms becomes much less and normal operating periods are much longer (50 percent more, and over). The resulting conservation of materials makes it practicable to design a cell requiring less building area, and which on account of its light weight may be handled by cheap overhead cranes or on rollers. The Marsh cell can be made about twice as deep as has usually been considered practicable. The resultant decrease in required floor-area may be used in decreasing the power consumption at least one-sixth or increasing the output per unit space by approximately 50 percent. Owing to its many merits, the Marsh cell makes it feasible to make chlorine in many instances where it used to be cheaper to buy bleach or liquid chlorine. Cheap power is probably a thing of the past, and with the Marsh cell power can be conserved to such an extent that the saving in expense of other materials on account of the saving in power amounts to nearly twice the saving in power in an average case. The commercial uses of chlorine are described, and the importance of a large supply of cheap chlorine is strongly emphasized. A. P.-C.

K-12. Efficiency of the News Print Splice. Pulp and Paper Magazine, xvii, 40. Resultant from the great inconvenience and annoyance caused in the press room by the breakage of news print paper at or near the splices made at the paper mills during manufacture, and the complaints from the printers that the paper does not hold at the splices, experiments were made with a view to improving conditions, a machine being designed and built for testing narrow specimens cut from the splices to be examined. Following a series of tests and investigations the following conclusions were drawn:

1. The adhesive strength of the tissue used with an iron at a suitable temperature is ample for making splices in newsprint paper.
2. The best temperature at which to keep the iron is about 130° Cent.
3. Splices should be "flagged," though careful manipulation and correct iron temperature remove practically all danger of a break at the splice.
4. The most general causes of breakage of newsprint paper in the press at or near the splices are careless manipulation on the part of employees, who make the splices, and unsuitable iron temperatures. A.C.

K-12. History of the Papermachine. Papeterie, xliii (April 10, 1921). Brief outline of the development of the papermachine from the time of its invention to the beginning of this century.—A. P.-C.

K-21. Manufacture of Tarred Roofing Paper. M. ARGY et H. LHOMME, **Papeterie,** xliii, (April 25, 1921. General description of the type of machine used in America for the manufacture of tarred roofing paper.—A. P.-C.

K-23. Handmade Filter Paper. J. BARCHAM GREEN, **J. Soc. Chem. Ind.,** xl, 100-1R (March 31, 1921). Brief description of the manufacture of handmade filter paper as carried out in England.—A.P.C.

L-5. Action of Hydrazines on Cellulose Acetates. W. LEIGH BARNETT, **J. Soc. Chem. Ind.,** xl, 61-3T (March 31, 1921). Under normal conditions cellulose has not been known to react with phenylhydrazine to give well defined products, owing to the inertness of the cellulose complex and to the fact that it is insoluble in the ordinary solvents which are used in the case of the simplex ketones. If the dissociation of the cellulose complex, $(C_6H_{10}O_5)n$, occurs, and if this is brought about by rupture of the oxygen linkages freeing more and more ketonic groups as the value of **n** grows less, then at the same time there will be a progressive increase in the amount of phenylhydrazine reacting with the ketonic groups to form hydrazone. The results obtained from a large number of experiments both with di- and tri-acetylcellulose, and also phenylhydrazine and **p**-bromophenylhydrazine, indicate that it is possible to obtain a series of definite compounds containing nitrogen (and halogen) in quantities corresponding with the amounts expected from cellulose acetates. The results are indicative of the manner in which the complex cellulose is degraded by progressive resolution into simplex groups of the same empirical composition, but which contain active ketonic groups. A. P.-C.

M-0. "Autovapor" Thermo-Compression Evaporator. Pulp and Paper, xix, 393-6 (April 14, 1921). Description of the "Bruden" compression process of evaporation furnishes by Escher Wyss & Company, Zurich, Switzerland, through their Montreal office. The liquid in the evaporator is first heated by means of live steam and brought to a boiling temperature. The vapor generated from the fluid is drawn off into a compressor, and after being compressed is sent through a heating coil in the evaporator where it condenses. The latent heat of evaporation goes back into the fluid where it again generates vapor, thus completing the cycle. The compressor thus acts as a booster by means of which the vapor coming from the fluid is brought to a higher level so that it can be used again for boiling and evaporatinug the fluid. The heat of the vapor is thus entirely recovered and utilized, and the process requires no supply of new heat except to make up for small losses through radiation. The heat equivalent of the energy supplied to the compressor is only a small fraction (about 9 per cent) of the total heat utilized, which makes the process especially suitable for installation where mechanical energy (electric or steam) is used. Figures are given to show that by the "Bruden" process 50 to 65 percent more water can be evaporated than by using triple effect evaporators. With fluids similar to water, evaporations up to 84 [illegible] per k.w.h. easily can be obtained.—A. P.-C.

M-0. Vapor Compression System of Evaporation. GUSTAV CARLSSON, **Chem. Met. Eng.,** xxiv, 645-7 (April 13, 1921). See preceding abstract.—A. P.-C.

P-0. Hygienic Measures to Promote Welfare of Employees. Paper, xviii, 4 (March 30, 1921). Paper prepared by the Engineering Section of the National Safety Council on the importance of a good drinking water supply and convenient and sanitary washrooms, locker rooms, and toilet facilities in mills.—A. P.-C.

R-5. Swiss Paper Industry. F. P. RENAUT, **Papier,** xxiv (April, 1921). Brief analysis of the present status of the paper industry in Switzerland.—A. P.-C.

R-7. Selection of Office Workers by Test. EUGENE J. BENGE, **Industrial Management; Paper,** xxviii, 5 (April 6, 1921). Office workers should be subjected to a "clerical test" i.e., a test of specific clerical ability. The general steps in the devising and standardizing of a clerical test are usually as follows: (1) analysis of the work to discover the most important elements; (2) preliminary selection of the content for the test; (3) phrasing of items and compilation into test form; (4) tryout of tentative test on those at present engaged in task, to discover if workers rated "Good" average higher in test than workers rated "Poor"; (5) revision of tentative test into final form. The article indicates the detailed procedure necessary to devise a specific clerical test for a position of Extender and Verifier with a city gas company.—A. P.-C.

R-11. The French School of Papermaking, Grenoble. L. BARBILLION, directeur de l'Institut Polytechnique de Grenoble.. **Papier,** xxiv, 97-101 (March, 1921). Sketch of the founding and development of the French School of Papermaking.—A. P.-C.

R-12. Box Board Costs E. G. CLERKE, **Paper,** xxvii, 25 (Feb. 23, 1921). Analysis of the cost system at the Richardson Company's mill, showing that it has been developed to a point where it tells practically from day to day whether the board is being sold at a loss or at a profit, and also that it has given information which has paid for the cost of installing and maintaining it many times over.—A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 13th August. Generally speaking, the paper trade, as a whole, continues dull, the dullness being more pronounced in some lines than in others. But though the industry is still so far from brisk, the firmer and more confident under-tone to the trade, which was noted last week, still persists. The general opinion undoubtedly is that the depressed conditions, to which the industry has been subject for months, will not last much longer without substantial relief.

At the same time, there have been certain recent occurrences which, for the moment, impart a distinctly dejected atmosphere to the industry. The difficulty and delay in the financing of the Riordon Company is one of these. Another is the anxious situation in which the Kaministiqua Pulp and Paper Company which defaulted in payment of the bond interest due on the 1st July finds itself. Yet another is the appointment, noted elsewhere in this issue, of a receiver for the Mattagami Pulp and Paper Company. The Kaministiqua concern was organized when the market was sky-high. And the Mattagami Pulp and Paper Company is also one of the newer enterprises. But that Riordon, Kaministiqua and Mattagami should all be in difficulties together wears to some eyes a somewhat sombre look for the pulp industry generally. A falling off in demand, coupled with a decline in the prices of pulp,—these are conditions which confront the industry at large. But it would be at once fallacious and unsatisfactory to generalize unduly from a few specific instances of companies which, in a time of singular and sudden "topsey-turveydom" have not had a fortunate experience. On the contrary, it is at once wiser and more consonant with the basic facts of the case, to read the moral of the satisfactory margins that the great majority of pulp and paper concerns have been able, as was pointed out editorially last week, to carry forward during the past year.

There has been a lot of reckless and often indiscriminate criticism of pulp and paper concerns by those who are either imperfectly informed as to conditions or else, for some reason or other, appear to desire to reflect harshly on the industry. But those who criticize it for undue expenditures would do well to make sure that they are not speaking out of their turn. It may be that the sudden and unexpected fall in prices coming right on top of heavy expenditures generally incurred in putting Canadian mills, as a whole, in apple-pie order, and, indeed, in superlative shape for production, has momentarily put one or two organizations in something like straitened circumstances. But, whatever way be said as to the moment chosen for such expenditures—and it is proverbially easy to be wise after the event—that these very expenditures will hereafter abundantly justify themselves in enhanced economy of operation is an indubitable fact.

In some quarters the passing of the Wayagamack dividend has been made the subject of some adverse comment. In this case, such comment, there is the best reason for saying, is very wide of the mark. That Company's standing is second to none, and trade has improved considerably during the last few months, especially in Canada. Its passing of the dividend, it can be stated authoritatively, is due not to a lack of business, but to the fact that the directors believe in the reasoned and conservative policy of maintaining the Company's resources, at this juncture, unimpaired for the benefit of the shareholders. From all the information one receives, business doing in the kraft industry, while not what it was last year, is yet of good volume as compared with many other trades, and the outlook is favorable for the future. There are certainly no grounds for pessimism.

PULP.—At present, there is still little revival in the demand for pulp. Improvement has been expected week by week, but so far there have been little evidences of its materializing. The falling off in the demand for sulfite pulp is given as the reason for the appointment by the Courts of a receiver for the Mattagami Pulp and Paper Company. Advices from New York indicate a little better prospect for ground wood. while the apparently forced liquidation of Scandinavian chemical pulp stocks has a depressing effect in our best market for these grades.

NEWSPRINT.—Despatches from Canada to New York state that some of the Canadian mills have reduced prices from $95 to $80 a ton for delivery in the last quarter of the year. A fortnight ago, it was mentioned in this column that it was rumored that certain mills, in order to secure business, had made some substantial price concessions, and it was stated at that time that the writer was sceptical as to this and could obtain the writer was sceptical as to this and could obain no verification of the rumor. That is still the writer's position. And officials of the International Paper Company stated last Friday, according to a despatch from New York, that no action had been taken as to any further reduction in prices, that, so far as was known, none was contemplated in the immediate future, and that they placed little credence in the reports of a reduction in prices in Canada. On the other hand, speculative items in the daily press have linked up last week's meeting of representatives of the paper trade held in Montreal, not only with the Fordney bill, but also with a contemplated reduction in the price of newsprint for the last quarter of the year.

WRAPPING PAPERS.—There has been little change in the general wrapping paper situation, but the representative of one of the largest kraft mills in the country told the writer today that of the orders for kraft are coming in more freely.

BOOK PAPERS.—The mills could easily do with more business in book papers. but there has been some increase of activity in the jobbing trade. Orders are somewhat increasing in number, but they are still of small dimensions.

TOILETS AND TISSUES. The business in tissues continues good. That in toilets is falling behind a little, but still there is something appreciable doing.

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INQUIRIES SOLICITED:

NEW YORK MARKETS.

New York, August 13. (Special Correspondence).—Current activity in the paper trade continues mainly of routine character. There is no great expansion of demand for any one grade of paper or paper board though it can be said that business is looking up rather than sliding backward. Consumers are still buying principally in hand-to-mouth volume, showing little disposition to increase operations while matters in their own trades are slow, and jobbers are placing orders for paper with mills only when in immediate need of supplies with which to fill commitments. Some paper mills in the States are running at no better than 50 per cent of capacity, but on an average production is at a larger rate than this. Nearer 75 per cent of full capacity is generally considered as closer to the approximate basis of operations today, and signs are not wanting that as the summer season draws to an end and the usual autumn stimulation of business makes itself felt paper manufacturers will find enough to do to warrant greater production. In fact, a majority in the trade anticipate a marked revival of activity within the next month. August is expected to be the last month of dullness, with a gradual though steady and healthy pick-up in business looked for to begin in September.

Further recession in prices on kraft wrapping paper has been recorded. Purchases of No. 1 domestic kraft are reported by New York jobbers at 5.50 cents per pound f.o.b. mills, while even those manufacturers situated near to consuming points are said to be accepting orders freely at 6 cents. The decline in kraft paper prices is considered as a direct outcome of the sharp drop in kraft pulp costs, thus enabling manufacturers to produce kraft paper at cheaper prices. When it is considered that No. 1 kraft pulp has been bought at 2 cents per pound it will be seen that converters of the raw material so bought into finished paper are afforded a fair margin for profit even at 5.50 cents a pound for kraft paper.

Persistent rumors to the effect that the contract basis will be reduced for the final quarter of the year have a weakening influence on the newsprint market notwithstanding that such figures as are available show the industry to be in a strong statistical position. Yesterday local newspapers printed telegraph reports from Montreal stating that while nothing definite had been given out concerning the negotiations going on there among newsprint manufacturers it was understood on high official authority that the export price in Canada for the last quarter of 1921 will be 4 cents per pound or $80 a ton a decrease of $15 per ton from the third quarter rate . Such reports obviously cause publishers to hold off in entering commitments unless urgently in need of paper and the buying done at present is almost solely to fill immediate wants. It is stated on good authority that consumption of newsprint in the United States is showing only a negligible decline from 1920. It is estimated that publishers are using within 4 per cent of amounts consumed last year, and some are said to be drawing on their own stocks held in warehouses, which were abnormally large, and for this reason production here and in Canada has not been keeping pace with consumption.

(A careful inquiry shows that the above mentioned reports regarding price are, to say the least, premature, if not indeed, entirely erroneous.—Ed.)

Importation of German and Scandinavian newsprint also is depressing prices to an extent. Print paper from these sources is said to be coming into the States, according to late figures, at the rate of about 120,000 tons annually. This is equal to about one-tenth of the country's 1920 production and about 6 per cent of the present consumption. Foreign newsprint is reported to have been offered as low as $70 per ton in small lots in the local market, while offers of large tonnage are reported at $80.

The fine paper branch of the industry is dull. Demand is chiefly for small quantities ,and competition among mills for such business as is to be had makes for weakness in prices. Low-grade wood bond papers are offered down to 8.50 cents per pound at mills, while a fairly fine quality of sulphite bond is to be had freely at 11 to 12 cents. Tissues continue to be one of the brightest spots in the trade. There is a steady call for fine tissue, though of limited proportions, and coarse grades are moving in good volume. Mills making tissue towels and napkins are reported operating at close to maximum capacity and to be readily finding an outlet for their output.

Book papers show little change. Machine finished book is quoted at a range of 6 to 6.75 cents per pound f.o.b. mills, depending on the quality of the paper concerned and the tonnage wanted. Some manufacturers name a differential of but one-quarter of a cent per pound on super book, while in out of the way cases it is said mills are quoting super at the same level as machine finished book.

Quotations on board display a stiffening tendency. As an instance, one of the leading mills in the East this week withdrew all prices and is temporarily out of the market, and it is expected that when the mill in question again issues quotations they will be at a considerable advance over the figures at which it has recently accepted orders. Board prices have worked down to a

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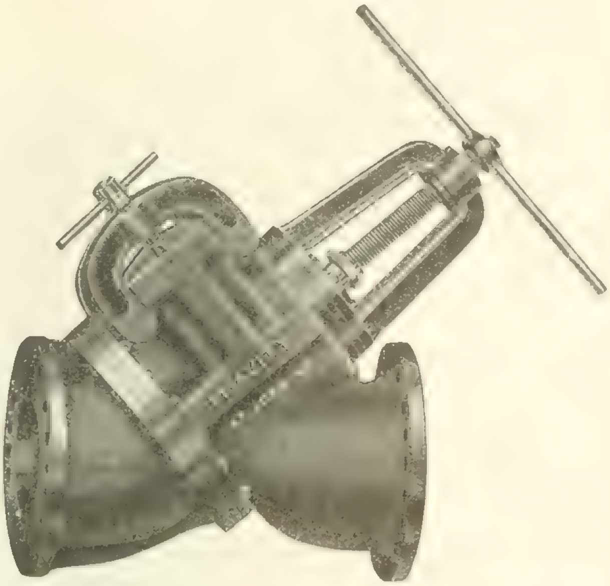

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point where there is small room for profit for the manufacturer, and it is presumed that steps are being taken to strengthen the market. Present prices run at around $28 per ton f.o.b. New York on plain chip and between $30 and $32.50 on news board.

GROUND WOOD. A steady tone marks quotations on ground wood and the tendency is decidedly in an upward direction. In fact, information has been received of several domestic grinders boosting quotations on freshly ground pulp from $28 and $30 a ton up to $32 at the grinding mill, and the market seems headed for a level of $40 a ton delivered consuming point. Even stored ground wood has been sold this week at $35 delivered, which indicates the undercurrent of strength in prices. Newsprint mills are reported absorbing fair tonnages of mechanical pulp, and board manufacturers are said to be buying in moderate volume, which, in conjunction with a good many grinding mills closing down because of low water, makes for a firm market condition. Producers are cautious about entering future commitments and are mostly refusing to book orders calling for deliveries more than a month off.

CHEMICAL PULP.—Offerings of pulp from European sources at surprisingly low prices, and the switching of buying by consumers from domestic to imported pulp, have placed the domestic chemical pulp market in a condition bordering onto demoralization. Producers in the States are generally refusing to endeavor to compete with foreign pulp at the prices the imported product is being offered at present, it being their contention that they cannot possibly manufacture either sulphite or kraft at such figures with a profit for themselves. Prices on domestic pulps consequently are largely nominal. No one seems to know what constitutes the market basis or what can be actually obtained for the different grades. Opinion in the trade is that Swedish producers are simply liquidating surplus stocks of sulphite and kraft, being obliged to do so because of their financial position, and that they are shipping pulp to America to be sold at prices which represent a heavy loss to themselves. Reports from the other side say that upwards of 40 mills in Sweden have shut down, and this leads members of the pulp trade here to believe that as soon as surplus holdings are removed the situation abroad will change considerably for the better.

It is reported that a large tonnage—approximating 1,000 tons—of No. 1 Scandinavian kraft pulp was sold several days ago at 2 cents per pound ex the dock at an American port. This price is doubtless an exception, but foreign kraft is freely available in moderate-sized lots at 2.25 cents. Foreign bleached sulphite is selling here at 4 cents and No. 1 unbleached sulphite at as low as 2.50 cents.

PAPER STOCK.—With old paper prices on a low level, where in most instances, dealers say, there is no profit in collecting and sorting stock, most packing concerns are reducing operations to a minimum, and available supplies are growing so light that the scarcity is commencing to have influence on prices notwithstanding that consumers are buying in small volume. This situation is particularly observable in soft white shavings, white blank news cuttings, books and magazines, and several of the bulky grades such as mixed papers and folded newspapers, and dealers assert that it is becoming quite difficult to locate sizeable stocks of these grades.

OLD ROPE AND BAGGING.—Old rope is quotably steady at about 4 cents a pound at shipping points for domestic manila rope in No. 1 condition, with importers reporting sales of foreign rope at a quarter of a cent under the domestic basis. Old bagging continues in a dull market position and is mainly nominal in price at around 75 cents per hundred for No. 1 scrap bagging.

MOTOR HAULING CUTS WOOD OPERATING COSTS.

The day of the horse is passing in the logging camps. The cost records of the horse compared with the records of the motor vehicle in several recent carefully checked tests, show that the use of power equipment cuts the cost of log hauling as high as 70 percent.

These figures were presented by practical woodsmen during the recent convention of the Woodlands Section of the American Paper and Pulp Association, who have been forced to substitute power operations for animal hauling by the far greater economy of the motor hauler.

The figures given by these operators apply equally well to lumber operations as to woods camps of the paper industry, for the hauling problem is identical in both types of cuttings.

O. L. E. Weber, of the Watab Paper Company, Sartell, Minn., told of extensive use last winter of tractors, under conditions where horses could not be used at times, but he made his comparison of costs on the basis of horse equipment on passable roads. He figured that a 10-ton tractor would do the work of 36 horses, and a 5-ton machine of 15 horses. He made his cost comparison on the basis of 5,000 cords of pulp wood, 35,000 tamarack and cedar ties, 30,000 cedar posts, and 750,000 feet of Norway pine where he actually used tractors, but where he estimated the cost of horse operation under conditions of previous years. The cost of the job with tractors was actually $3,150. The cost with horses would have been $10,100, including cost of equipment in both cases.

Stanley H. Sisson, of the Racquette River Paper Company, operating in Northern New York, told of hauling 23,000 cords of 16-foot peeled wood 10 to 12 miles, an average of 65½ cords per day per tractor, handling 15,000 cords in 38 days. His comparison with horse equipment was as follows: One team hauling 9 cords per trip, double headers at landings, costing $15.50 per day, or $1.72 per cord. The tractor cost, on a basis of 60 cords, with two trips daily to landings, was $43.06 per day, or $.717 per cord. He, like the other wood superintendents, said that care in repairs and maintenance of tractors was vital to their successful operation, and also urged care in dispatching trains of sleds or wagons, with extra equipment being loaded or unloaded while the machine was on the road.

C. L. Tolles of the Phoenix Manufacturing Company of Eau Claire, Wis., giving figures for a steam hauler, with long trains of sleighs, said that the motorized cost was only about one quarter that of horse operations.

A. E. Drott, of Drott & Newall, handling another Wisconsin logging operation said his motor hauling cost him $1.50 per thousand feet of lumber, board measure while natives using horses were forced to pay $10, and then failed to get all their timber out. This was on a 10½ mile haul, and on a 7½ mile haul, the motor equipment cost $1 per thousand, as against $7 for horse hauls.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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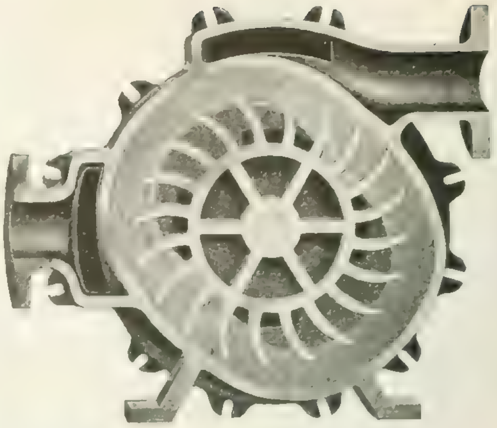
Nash Pumps for Pulp & Paper Mills



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EDITORIAL

SCHOOL DAYS.

Just mention school to the first twelve year old you see and notice the happy smiles that fail to appear, yet if you mention school days to the average grown-up you immediately call to mind a host of happy memories as well as, in most cases, a realization of many lost opportunities. School days were happy days for all of us, but in most cases the pleasant features were associated with activities outside of the school room. Happily, educators of the present day have come to a realization of the need for making school work attractive in order that it may be efficient. This is by no means an easy problem and it is fortunate that it is now receiving belated attention from many prominent educators who have not only had years of experience in teaching young people but who have also a vision of what the school room can and should be.

Among industrial concerns whose leaders appreciate the value of trained minds even for common tasks, the pulp and paper industry is prominently active. In most of the communities where pulp and paper mills are located this industry is the most important industrial activity. The failure, or at least the difficulty, of instituting improvements, and of calling forth suggestions for improvements, can be traced directly to lack of thought and difficulty of self expression. Perhaps fully as important is the often discouraging list of accidents, many of them are due to inability to read warnings and directions and when this is not the case it is due to thoughtlessness. Education, if not a cure-all, is the best known remedy for these troubles.

The most serious obstacle to the advancement of employees, whether in the mill or the office, is unquestionably lack of education. This results oftentimes in the necessity for a mill to look elsewhere for men to fill positions of relative importance. One of the principal reasons why the employees in the mill have not had sufficient education to qualify them for advancement is that they have found the school room dull and the instruction uninteresting.

The question is largely in the hands of the management of a paper mill if the local school is to be made sufficiently attractive to keep the children not only within its walls but actively at their work until they have received at least the fundamentals of an education that will be of real service when they go to work. The public school of a paper mill town should be one of the most interesting affairs that could be imagined. There is no phase of life that is not somehow touched and served by the product of the mill. There is no more fascinating series of miraculous changes than those which take place in the conversion of towering forest and tumbling waters into the delicate white sheet of note paper, the common paper bag, the everyday newspaper, or the paper box which every child sees every day. Most of these operations are going on within sight of the school house and yet in many cases the mill is known to the children only as the big building behind the closed gates where, perhaps, father or brother works during the day but about which the child has only a vague idea. The teachers, too, often have the haziest notion of the wonderful transformations that are accomplished by the town's principal industry. A little attention on the part of the plant engineer or superintendent would change the whole aspect of the teacher's job from a monotonous repetition of multiplication tables and spelling lessons into an active and vital contribution to the fitting of pupils for and into the great work of earning a livelihood and a life of service. An intelligent teacher will not find it difficult to comprehend the underlying principles of the manufacture of pulp and paper and frequent observation through visiting the mill with its many very ordinary problems of mathematics, physics, chemistry, electricity and mechanics that come up from day to day would furnish an unlimited store of interesting points of contact between the every day lesson in the school room and the every day work in the mill.

The editor had the pleasure of representing the industry on a committee which was formed to encourage the socializing, if we may use that work without being accused of Bolshevism, the education of children and the object of the committee's work has been to encourage such changes in educational methods as would impress on the student the importance of the community and the obligation of each member of the community to work for the common good, to appreciate the honor of being a Canadian citizen and to understand not only his rights and privileges but his duty to serve in every way possible his country, province and town. It is little more than an attempt to incorporate what might be called an educational version of the Golden Rule into the ordinary presentation of ordinary lessons and to tie them up with the every day life of the community. Children are fascinated with activity and if the work in the school room can be shown to contribute to the efficiency necessary to carry on the town's business and the mill's business then it is going to be vastly easier to train the minds of the children in such a way that they will contribute in a far greater measure to the industrial and social welfare, not only of the community that trains them, but to the country at large.

The Pulp & Paper Association has realized the need for text books which, in a measure at least, would assist in bridging the gap between the ordinary subjects of study and the interesting activities of the mill which, unfortunately in many cases, lure the student all too soon from his desk and text book to what, for the time, seems the more attractive position at the machine or in the office. Education should be attractive and serviceable, should connect the boy and his work. This realization has resulted in the appropriation of a generous fund by the pulp and paper industry for the preparation of a set of text books which cover not only the manufacturing process but the fundamental preliminary instruction in mathematics and elementary science. Illustrations and examples are taken wherever possible from the actual paper mill experience of the authors and the editor. The first two volumes, which will include preliminary work are now on sale and are being distributed in Canada through the Pulp & Paper Magazine. Volume 3 is practically ready for the printer and should be in book form in a few months. Readers of the Magazine and management of mills in pulp and paper communities will do well to look into the peculiar advantages of basing the school work on these texts. They are equally as well adapted for the those who want to study at home.

CHEMISTRY IN CANADA.

From $1,677,216 to $17,053,074, an increase of more than 1,000 per cent, tells the story of the growth of the various chemical industries in Canada from 1912 to 1919. These figures are the value of exports. Imports at the same time grew from $12,595,851 to $32,788,704. Growth has been most rapid during the war period, but many of the plants erected during the past 7 years make peace time products.

Canadian chemistry has great possibilities, especially along electro-chemical and the closely associated electro-metallurgical lines. With vast water-powers and extensive deposits of minerals, Canada is in a strategic position. Chemical industry is likely to have national characteristics, as is the case with the pulp and paper industry. There is a great new channel to be dug by the two in the utilization of waste sulphite liquor. In this connection it is barely possible that some day the government mill see the good of duty-free industrial alcohol, which can be made from the waste liquor, and which, no doubt, would be largely used as a basis for new industries whose products would largely supply the home market with that $33,000,000 of imported chemical material.

Standing at the door of such a future, it is very fitting that Canada should be honored as the place for the annual meeting of the Society of Chemical Industry, and that our eminent chemist, Dr. R. F. Ruttan, should be the president during the next three years. We are sure they will be significant ones in the history of the Society and in the development of Canadian chemistry.

COBWEBS.

It is pleasant to note the rapid growth of our contemporary, Le Papier. Publication was discontinued during the war, but recovery seems quite complete. There are always some excellent articles.

A man in Fort William was electrocuted climbing a pole for a cat. That's a new one. We thought pole cats killed by asphyxiation.

A newspaper despatch from Ottawa says the Union locals are awaiting information from headquarters regarding the recent decision of the Association of American and Canadian Pulp and Paper Manufacturers to lower wages. The inference is incorrect as the associations did not act in this matter.

The Hon. Mr. A. David was quite correct in stating that the export in the raw state of our natural resources is commercial suicide. He is not quite correct in assuming that the whole difference between the value of the raw wood and of the finished paper is wages— mills must be built, machinery installed, coal bought, and insurance and interest paid.

There seem to be hints of a general election in Cananada this Fall. Good. That means more news and more newsprint.

The population of Thorold, Ont., has more than doubled in the last ten years.

Alongside the lament that the U. S. Emergency Tariff is ruining our grain trade is the report that more wheat was exported in June and July than in the same months last year.

Consideration of the effect of the U. S. tariff on our decreased general exports to that country should not disregard the general condition there that materials are not wanted as they were a year ago.

A "T" FOR A "D"

We are told that it is wrong to take "an eye for an eye"; it is equally wrong to put a **D** for a **T**, at least chemically. This error is frequently made in writing **sulphide** where **sulphite** is intended. Three atoms of oxygen may not seem much, but it represents a vast change of chemical character.

Moisture Contents of Paper During Formation

By JAY SEE.

In reply to a question to the editor on this subject, an expert on paper machines has kindly given the following helpful information.—Ed.

In the manufacturing of paper it is often desirable to know the percentage of fibre that is carried as the web of paper is forming on the Fourdrinier toble at different points during the travel of the wire, and the percentage of dryness of the formed web of paper as it passes over the machine. The proper amount of water from the flow box to the first suction box must be maintained for, as the stock leaves the slice, the character of the sheet, or web of paper depends on the moisture or water carried as this affects the felting of the fibers. An important factor is the diameter of the table rolls, and the distances between them. A properly formed sheet will press without crushing, and when reaching the dryer unit of the machine, will permit the moisture contents to be easily evaporated, without cockling or the making of broke.

To determine the proper percentage of fibers at the Fourdrinier table, a careful survey was made of the moisture content, on a newsprint machine manufacturing standard news, the composition of the paper being 23 per cent sulphite, 75 per cent groundwood and 2 per cent loading, and operating at a speed of 634 feet per minute and giving an actual daily production of 57¼ tons of newsprint. The wire was 158'' wide by 70' long with a pitch of 27 inches. The Fourdrinier table was constructed in the following manner: breast roll 22'' diameter, 160'' face; table rolls 5½'' diameter by 160'' face, spaced 6¼'' apart for the first ten rolls, and the balance space 6½'' on centers; seven suction boxes, arranged two in front of the dandy roll and five after the dandy roll; the dandy roll was 12'' diamter by 160'' face and wound with 70 mesh wire; the bottom couch roll was 28'' diameter by 162'' face, and the top couch roll was 26'' diameter by 166'' face.

The press part of the machine consisted of three presses, paper traveling forward through first and second presses and reversing at the third press. Each press was arranged for a felt 52 feet 6 inches long. The bottom press rolls were 24'' diameter by 158'' face ¾'' rubber covered and crowned .035''. The top rolls for first and second presses were of wood, 26'' diameter by 162'' face, and crowned .018''. The top roll for third press was 24'' diameter by 162'' face ⅝'' gun metal jacket, and ground perfectly straight.

The paper made was pressed perfectly and dried evenly and showed perfect tests in every way, therefore, the factors involved in the formation of the sheet demonstrated perfect arrangement of the felting of fibers at Fourdrinier table. To determine actual conditions a test for percentage of fiber and water was taken at different points along the machine from flow box to dryer unit; the test of moisture from slices to first suction box was somewhat uncertain but a fair working knowledge was obtained of the proper moisture content to be maintained for proper formation. The results arrived at are as follows:

Stock at flow box, 1 per cent fiber, 99 per cent water.

Stock leaving slice, 2 per cent fibre, 98 per cent water.

At fifth table roll from slice, 4½ per cent fiber, 95½ per cent water.

At tenth table roll, 5½ per cent fiber 94½ per cent water.

At fifteenth table roll, 6¼ per cent fibre 93¾ per cent water.

Before reaching first suction box, 7 per cent fibre 93 per cent water.

At the dandy roll, 14 per cent fibre 86 per cent water.

After leaving last suction box, 19¾ per cent fibre 80¼ per cent water.

After leaving nip of couch rolls, 28½ per cent fibre 71½ per cent water.

After leaving first press, 32¼ per cent fibre 67¾ per cent water.

After leaving second press, 36⅜ per cent fibre 63⅝ per cent water.

After leaving third press and before reaching dryers, 39¼ per cent fibre 60¾ per cent water.

The dryer unit consisted of one 24'' diameter receiving dryer, forty 48'' diameter paper dryers, and four 48'' diameter felt dryers. The dryer unit was equipped with two bottom and two top dryer felts. The last top dryer and the last bottom dryer were used as cooling dryers.

The finished paper was of good character, even formation even thickness, calendered perfectly, and wound into perfect shipping rolls.

NOTE:—Other authorities mention less fiber at the couch and the dryers, but we have no statements that give, at the same time, mechanical particulars.—Ed.

WATER IN PAPER ; ANOTHER REPLY.

Mr. John W. Brassington, of the Port Arthur Shipbuilding Co., sends the following:

Some years ago I had occasion to make a series of tests to ascertain the distribution of water on a Fourdrinier paper machine, the results of which may be of interest to others in the trade.

The amount of water used with the prepared pulp from the beating engines as the mixture runs on to the wire varies according to the character of the stock and of the paper to be made; but I have found this variation to fall within certain limits for the same class of paper manufactured, provided the machineman is skilled in his work and uses good judgment in regulating it.

The following results were obtained while manufacturing an ordinary machine finished printing paper, the fibrous stock for which consisted of sulphite pulp, ground wood, and a proportion of esparto pulp, about 15 per cent. The mineral matter in the paper consisted of china clay. The wire on the machine measured 66 inches wide by 30 feet long and was capable of yielding a web of paper measuring 58 inches wide at the reel. The weight of paper made during the tests was 21 lb. double crown (20'' x 30'') 80 sheets to the ream, equivalent to about 30 lbs. double demy.

The amount of dry paper stock in the beating engines varies from 3¼ to 4¼ pounds per cubic foot, in accordance with the kind of paper to be made and the amount of mineral loading used. It reaches its maximum in the production of papers such as "imitation art," which are heavily loaded with clay.

In this particular case the solid contents (i. e., fibre and mineral matter), in the stuff chest gave on an average of several determinations 1.808 pounds per foot, and when these solid contents were dried at 105 deg. Centigrade they gave 12.8 per cent of mineral matter. The amount of water and total solids pumped into the regulation box was therefore, nearly 1,106 cubic feet, equal to 6,885 imperial gallons, per ton of paper stock.

The paper stock, as it leaves the regulating box, is mixed with the "back" or "white" water from the machine prior to its passage over the sand traps and through the screens, any deficiency in the volume required being made up from the mill supply.

It was found that the mixture flowing on to the wire contained 0.575 pounds of total solids per cubic foot containing 21.5 per cent of mineral matter, whilst that passing through the wire cloth into "save all" below contained 0.227 pound of total solids per cubic foot with 50.2 per cent mineral water. The amount of dilution that took place in the mixing box was therefore, nearly 3½ times the volume of the paper stock from the stuff chest, or to nearly 22,000 imperial gallons reckoned on one ton (2,000 lbs.) of dry paper stock.

It was difficult to ascertain the volume of this "save all" water accurately, but the writer is of the opinion that it represents about one-half of the total on the machine. When it is mixed with the wash water from the spray pipes, etc., it is pumped to the separating vessel, there to be treated as above described.

The overflow from this separating vessel, which ran to waste, contained 0.064 of a pound of solids, total, per cubic foot, of which 96.3 per cent was mineral water. As this mineral matter consisted almost entirely of china clay, when determining it by ignition, due allowance was made for the combined water in the clay. The volume passing away or lost was small, as the bulk of it was used for filling and emptying the beating engines. Obviously the loss of fibre from this source was negligible.

It would appear therefore, that the amount of water run on to the wire cloth of the paper machine per ton of paper was in the neighborhood of 7,000 imperial gallons, and that the bulk of the fibre and clay passing through the wire as well as that gathered from other sources, was returned to the mixing box of the machine. In point of fact this fibre and clay represents a circulating quantity and when once its flow is adjusted, has not any material influence on the weight of paper, this being regulated by the stuff valve on the regulation box.

What took place after the web of paper was formed on the wire was ascertained to be as follows:

1. The wet web of paper after passing the suction boxes of which there were two, and before passing under the couch roll, contained 89.8 per cent of water.

2. The water left in the web after passing the couch rolls and before entering the first press rolls was 79.7 per cent.

3. The web finally contained 63.8 per cent water after passing through the first press rolls and before going on to the drying cylinders. This figure represents the amount of water to be evaporated by the drying cylinders and is equivalent to 1.76 tons per ton of paper made.

There were no second press rolls in operation on this machine while these tests were being made, as these rolls were undergoing repairs, but as the machine was narrow, a uniform and good pressure could be obtained with those in action, as shown by the low percentage of water left in the web after passing them.

The writer has found that in many cases where thin sheets of paper are being made, such as the above, there is practically no water removed by the second press rolls that their function is simply to smooth and glaze the under surface of the web of wet paper. A long series of observations extending over many years has established this and also the fact that seldom less than 63 per cent of water is left in the wet web after passing the second pair of press rolls.

It is doubtful, in the writer's opinion, what advantage is to be gained in drying the paper by using a third set of press rolls such as exist on many modern machines. In cases of fast running, adding to the number of presses, a more gradual pressure can be applied with less injury to the web of paper and to the felts, but the final moisture in the paper left for the drying cylinders to evaporate ranges as a rule from 62 to 68 per cent.

The foregoing may be summarized as follows:

Solids, i.e. Mineral and Fibre.

		Water
Mixture going onto wire	0.92	99.08
Before entering couch roll	10.20	89.80
After passing couch roll	20.30	79.70
After passing first press rolls ..	36.20	63.80

In a high speed News machine there is about one-third of one per cent of fibre and solid matter in the stuff as it flows on to the machine at the flow box. Nearly 50 per cent of this moisture is lost on the first half a dozen table rolls, and the first save-all box is designed to take care of this great quantity of water. This leaves about six-tenths of one per cent of solid matter after the first half dozen table rolls.

By the time the paper gets to the first suction box the stuff contains practically about 5 per cent of solid matter, and after passing over the suction boxes contains approximately 10 per cent of solid matter, which is before entering the couch roll. Before it enters the first press roll it contains 20 per cent; before entering the second press roll it contains from 25 to 30 per cent; the third press and the fourth press, if used, at the very best service will hardly reduce the moisture in the paper below 60 per cent. We generally figure on the paper leaving the last press as containing 36 to 37 per cent moisture. Needless to say, care should be taken that paper as it leaves the dry end should contain about 10 per cent moisture and 90 per cent fibre.

Mr. Brassington adds: — You will realize that the question is largely theoretical, because the quantity of water removed at the different points of the paper machine must vary according to the handling of the machine; heavier weights on the first presses will make quite a difference in the relative proportion of moisture at the press points, while the number of table rolls governs the moisture of the paper when it gets to the first suction box, but the equation also contains a symbol expressing the speed of the paper. For instance, I have known of the table rolls being removed on a high speed machine in the summer time, so as to allow the water to get down closer to the suction box.

As you know, I have often expressed a wish that experiments could be made determining the inter-relationship between the number of table rolls per foot per minute speed at different elevations of the wire for different heights of slice head.

There is no question in my mind that careful experiments along this direction would lead to a very decided indication that a considerable elevation of the flow blox and a sluice way to a level wire, so designed that the stock would strike the wire at a slighter greater speed than the wire is running, would give a much better formed sheet than the present method of elevating the breast roll.

The shake in such a design would be replaced by interference baffles, causing a commingling of the fibre after it flows over the apron.

LESSONS FROM THE DROUGHT.

An Instructive Editorial from The Presbyterian Record Montreal.

Droughts are, more or less, the fault of men, in needlessly destroying the forests.

There are two chief sources of rainfall, ocean and forest. Both have moisture which they give off in vapor and it comes back to earth in rain.

The heat of the sun causes moisture to rise from ocean and seas and lakes, just as the water in a basin will gradually go off in invisible vapor until the basin is dry.

This moisture, rising from the sea, forms clouds, which are simply vapor, like the steam from a kettle. The wind carries these clouds far away over the land and when the particles of moisture come together and get too heavy for the air to hold them up they fall in drops of rain, watering the earth, running into streams and brooks and rivers, back again to the ocean, to rise in vapor, once more.

This change has been going on ever since there was ocean and shore, the earth constantly watered from the sea, and the sea never getting any less, for its waters are ever coming back to it. Its generous givings do their beneficent work on the earth and return to its own bosom again.

The other source of rain is the forest. When a land is wooded there is a deep soft mould under the trees, made up of fallen leaves. This holds the rain, and from it there constantly rises a moisture into the air, which forms into clouds and falls again.

There are thus two continuous circuits by which the world is watered and washed, the shorter circuit from the forest and the longer from the sea. Man has no control over the latter but can modify the former.

When a country is stripped of its forests, it has no deep soft mould, sheltered by the trees, to hold the rain when it falls, so the rain rushes off at once to the nearest stream and on to the sea and soon all is dry again.

No moisture rises because there is none to rise, no clouds, no rain, except what is borne from a distance on the wings of the wind. God's Providence making up in some measure for man's carelessness and neglect.

The recent terrible famine in China, following long continued drought, has been largely owing to the fact that years ago the country was stripped of its forests, and its hills and plains left bleak and bare.

Much of our continent that was once covered with magnificent pine forest is now bare and barren, unfit for cultivation, and holding no supply of moisture when rain occasionally falls; whereas if it had been conserved, the larger trees taken out from year to year, the smaller left to grow, it would have yielded a perpetual harvest of choice timber and would have been a perennial source of rain supply.

Millions of acres of bare hillside in Canada should today be clothed with forest which would yield a continuous supply of timber and moisture.

One great lesson from the drought is the wisdom and duty of caring for the forests that yet stand, "using them as not abusing them," and the further duty of reforesting the lands not needed for cultivation. Norway has been reforesting for sixty years, and regrets that it had not begun a century earlier.

If the farmers of Canada would take the trouble, at odd hours, to plant seeds or saplings of good trees, oak, ash, walnut, pine, etc., which would need no further care, they would make a better country for those who come after, a satisfaction which is more satisfying than bringing gain to one's self, for the very act of thus living and working for posterity brings its own self-satisfying enoblement.

Another and greater lesson is that in the spiritual realm, drought and barrenness and lack of rainfall are in still greater measure men's own fault.

A COLLECTION OF EXCEPTIONAL PAPERS.

Series IV of "Technical Association Papers" has been issued and mailed to members. This makes a volume of 174 pages and covers. The volume contains verbatim reports of the various group meetings held during the annual convention of T.A.P.P.I., and all of the papers and their discussions are presented in full. The account of the banquet is especially interesting and entertaining. The after-dinner speeches are given in full and it is seldom that a more admirable mingling of grave and gay has been presented. Chemical warfare and the sources of the deadly gases used are described in a speech of great rhetorical ability by Professor Bogert of Columbia University, while Elwood Hendrick, president of the Chemists Club, is represented with a whimsical discourse on odors which he announced as a "Homily on Olfactics." In his inimitable fashion Doctor Hendrick spoke of odors in literature, the mnemonic associations of smell, and the function of smell in insects and animals. The relations of paper and electricity are touched upon by Calvert Townley, assistant to the president of the Westinghouse Electric & Manufacturing Company who, however, did not stick closely to his text and told many stories. Paper's place in our daily life and the appalling situation which would develop if newspapers were abolished, were the subject of an address by Arthur L. Dawe, secretary of the Canadian Pulp and Paper Association.

Technical Education in general was the theme of a speech by Philip T. Dodge, president of the International Paper Company, whose talk is reported in full. Mr. Dodge made a plan for the interchange of technical knowledge and drew a picture of a project he had in mind, for the establishment of a great central college or school for teaching the art of papermaking. It is a thoughtful speech well worth pondering.

Address orders, with remittance, to T. J. Keenan, Secretary, 342 Fourth Ave., New York. The price is $3.

Of all felicities the most charming is that of a firm and gentle friendship. It sweetens all our cares, dispels our sorrows and counsels us in our extremities.

PULP EXPORTS SLIGHTLY BETTER IN JULY.

July returns on exports from Canada of pulp and paper continue to reflect the universal depression existing in the market for these commodities although there are indications that the bottom has been reached, so far as demand if not so far as values is concerned, and that the near future will witness improvement.

The July exports of paper, pulp and pulpwood reached a total value of $9,661,595 as compared with $8,687,504 the preceding month and with $17,560.653 for July 1920. Exports of newsprint paper amounted to 1,146,362 cwts. valued at $5,539,623, compared with 847,604 cwts. valued at $4,295,181 the preceding month and with 1,219,439 cwts. valued at $5,727,193 in July last year.

The chief discrepancy is shown in wood pulp. Exports for July this year amounted to 845.150 cwts. valued at $2,870,401, compared with 648,885 cwts., valued at $2,225,425, the preceding month and with 1,893,461 cwts. valued at $9,137,733 in July, 1920. The details are as follows:

	July.	1920.	1921.
Paper	Book..	$ 110,596	$ 14,986
	Newsprint	5,727,193	5,539,623
	Other grades	1,039,225	241,546
	Total	$6.877,014	$5,796,155
Pulp	Sulphate..	1,383,104	390,068
	Bleached sulphite ..	1,402,957	515,280
	Unbleached sulphite	3,822,679	990,807
	Groundwood	2,528,993	974,246
		$$9,137,733	$2,870,401

Pulpwood to the extent of 80,835 cords, valued at $995,039, was exported to the United States during the month, compared with 144,741 cords, valued at $1,545,906 in July, 1920.

Countries of destination were: PAPER — United Kingdom, $81,670; United States, $5,243,134; Other countries, $571,351. WOODPULP—United Kingdom, $1,179,392; United States $1,507,146; other countries, $183,863.

Returns for the four months ending July 31st shows the following:

	1919.	1920.	1921.
Paper	$17,532,409	$26,423,454	$21,354,564
Pulp.	9,534,827	26,070,593	8,976,685
Wood	3.260,241	4,061,376	3,704,327
Totals . .	$30,327,477	$56,555,423	$34,035,576

It will be noticed that despite the subnormal conditions at present prevailing the returns for the first four months of the current year are well in advance of those for the same period in 1919 although very much less than last year.

MORE INCREASES THAN DECREASES.

Commenting on a chart which they prepared showing price tendencies in nine groups of commodities from 1914 to July 1st 1921, Dwight P. Robinson Company, engineers and constructors, say:

"It is now evident that price recessions in many industries have been arrested. During a recent week more price increases than decreases were noted—the reverse of a situation which had existed for 56 consecutive weeks.

"We call your particular attention to the curve for lumber and building materials, which has begun to straighten out. Building materials have taken a deflation of 139 points from their peak, as contrasted with the average deflation for all industries of 124 points, in spite of a more than normal demand for construction material. For the month of January contracts awarded were 6 per cent behind the January five-year average. For the period January to July 1st they were 9½ per cent ahead of the January to July 1st five-year average.

"There is not very much industrial construction going forward. When the large volume of this class of work starts, the increased demand will undoubtedly have a tendency to push building costs up, for the same laws of supply and demand obtain in the construction industry as in other lines, and it is not reasonable to suppose that in the face of such activity there will be an appreciably greater deflation.

"The railroads are now practically assured of government aid and accordingly may soon be in the market for the equipment and materials they have so long needed. Heavy railroad purchases will act as a strong tonic to the business situation and will undoubtedly affect general prices."

SCREENING STRAW PULP.

A short time ago we had occasion to publish an enquiry from a reader of the Pulp and Paper Magazine who desired information on the screening of straw pulp in order to get paper free from knots. Two replies to that enquiry have been received and we are indebted to Mr. John Goodey of Ottawa and the Union Screen Plate Company of Lennoxville., for their replies. The advice received is, in one case, to arrange the stuff inlet so that the stock and water are introduced below the screen plates and agitated in the ordinary way by the plungers and diaphrams and the screened stock passes up through the plates and overflows to the paper machines. This permits dirt and knots to settle out below the plates instead of being gradually forced through them with the good stock. A shower pipe with high pressure water is suggested for keeping the screen plates clean.

Further advice is to the effect that a prolific cause of dirt in stock, also threads, bunches of fibre, etc., is due to roughness on worn plates. It is essential that old plates be properly closed and re-cut or that new plates be used if clean stock is desired.

SWEDISH CELLULOSE MILLS CLOSING.

Stockholm, Tuesday.—In a report issued on the situation in the Hernoesands saw mills district, it is said that many companies are requesting the postponement of payment to the Government for the purchase of timber from the State forests. Saw mills and cellulose mills are obliged to close down, and now, in addition, co-operation between the lumber exporters has broken down and the selling society has been dissolved, so that chaos rules on the market. A few cellulose mills are still running, but it is only a question of days when they will close down and the production be considerably reduced. The lumber yards consequently are packed full of goods, which daily lose in value.—Paris Herald, July 30.

Mr. John F. Ferguson, power specialist, of Holyoke, Mass. has been spending some time in Canada, stopping in Ottawa and Montreal, and spending some time with the Paper mills of the St. Maurice Valley at Grand'Mere, Shawinigan Falls, and Three Rivers.

The Paper Industry and the Pulpwood Supply

By R. S. KELLOGG Secretary, News Print Service Bureau.

No other method of wood utilization approaches that of pulp and paper manufacture in the completeness with which the raw material is used and no one can set a limit to the number of articles of daily utility that it is possible to manufacture from pulp and paper. These articles will be manufactured in greater quantity and variety as our knowledge increases and as higher values of forest products lead to more scientific utilization of the timber supply.

Pulp and paper manufacturing is the one great industry using wood as a raw material in which there is much hope for the practice of forestry as a commercial undertaking upon privately owned land.

The production of large-size timber is too long an undertaking with too great hazards and too low a rate of return to attract the investor or to appeal to the practical sense of lumber manufacturers. On the other hand, the production of pulpwood of rapid growing species is a matter of much shorter time than the growing of sawtimber, and the amount of capital invested in a pulp and paper mill is so great as to require a long period of return.

Hence it is to the pulp and paper industry that professional foresters of the country turn most hopefully for the practical application of their principles.

The most superficial survey of the situation shows the urgent need of immediate and large scale efforts to provide a permanent supply of raw material for the basic industry of paper manufacture. We have become so accustomed to using paper extravagantly for a multitude of purposes that we do not stop to think that in most cases the piece of paper which we handle carelessly and cast aside is a forest product, and, what is more, a product of a rapidly disappearing type of forest.

To say that the production of wood pulp in the United States last year was 3,800,000 tons does not convey much to the ordinary reader, but the problem begins to take on a more concrete aspect when we say also that more than 6,000,000 cords of wood—chiefly spruce and hemlock—was used to make this quantity of pulp.

The magnitude of the paper industry assumes further proportions when we enumerate the different classes of paper produced last year:

	Tons.
Paper board	2,313,000
Newsprint	1,512,000
Book	1,104,000
Wrapping	832,000
Fine	389,000
Felts, etc.	367,000
Bag	212,000
Other grades	605,000
Total	7,334,000

In addition to this tremendous production of paper in the United States, imports (chiefly newsprint from Canada) amounted to 760,000 tons and exports to but 260,000 tons, making a visible supply in the United States in excess of 7,830,000 tons for the year, or 147 pounds per capita.

It is truly a paper age and even more truly a newspaper age. Newsprint consumption was 3 pounds per capita in 1880, 9 pounds in 1894, and 40 pounds in 1920. Last year was abnormal in many respects, yet there is no reason to think that the newsprint consumption in 1921 will be less than 35 pounds per capita.

It will be 217 years on the 24th of next month since the first newspaper was printed in America, and now our daily newspapers have a circulation in excess of 28,000,000 copies and there are more than 60 dailies between the Atlantic and Pacific whose circulation exceeds 100,000 copies, while some of them have several times this amount and one Sunday paper claims more than 1,000,000 circulation.

To most readers the daily newspaper is a transitory thing, hastily scanned and thrown aside, and the man who runs while he reads never stops to think what a wonderful co-ordination of service from lumberjack to newsboy is required to produce and give to him for two or three cents an up-to-the-minute resumé of world happenings in politics, industry, science, and education. Still less does the hasty reader realize that the newspaper which he holds in his hand is 100 per cent product of the forests of North America, for unlike some kinds of paper, wood fiber is the only constituent of newsprint paper. This is why the forestry problem touches so intimately every man, woman and child in the country, whether it be realized or not.

The average yearly pulpwood consumption in the United States is 5½ million cords, of which an average of 1,160,000 cords, or 21 per cent, is imported from Canada.

Our States of greatest pulpwood consumption are Maine, with an average of 1¼ million cords, of which 10 per cent is imported; New York, one million cords, of which one-third is imported; and Wisconsin, 800,000 cords, of which 30 per cent comes from outside the borders of the State.

The total amount of wood used for the manufacture of paper is not large compared with our consumption of forest products for other purposes, but because of the concentration of the industry in the Northeastern and Lake States and the large use of the three or four chief species of timber in these regions the problem of a future supply is particularly pressing.

The information at hand indicates that these may be in the Adirondack region of New York a total of 6,000,000 cords of privately owned stumpage of spruce, balsam, and hemlock, and there is in the same region about 9,000,000 cords of spruce, balsam, and hemlock stumpage on the State preserve, which at present is securely locked up against any use whatever.

If these estimates are correct, the total stand of pulpwood timber in the Adirondack region is equivalent to the rate of consumption of domestic pulpwood in the State for 25 years. However, the larger proportion of this total is on the State preserve, where all use is prohibited. Still further, these estimates make no allow-

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*Resumé of an address delivered before the Washington Section of the Society of American Foresters, March 24, 1921.

This concludes our series on Forestry in foreign lands.

ance for the large amount of timber of these species annually cut for lumber.

The latest data compiled in Maine indicate that the total stand of spruce and balsam pulpwood is about 28,000,000 cords against which there is to be set an annual consumption of at least 1,000,000 cords of domestic pulpwood by the mills of that State.

The paper mills of the Lake States are using half a million cords of hemlock yearly, which will probably never be replaced.

It would seem that there will be comparatively little pulpwood of the present species left in the Northeastern States and Lake States 25 years hence, even if throughout that period the supply of Canadian wood continues in volume equal to the present, which is very doubtful.

But the Canadian supply is by no means inexhaustible. While no complete forest inventory has been taken, fairly good general data have been compiled with the following result:

Estimated Spruce and Balsam in Eastern Canada.

Province	Estimated Stand	Available Stand	Annual cut for pulp and lumber	Years Supply Available Stand
Nova Scotia ..	25,000,000	25,000,000	300,000	80
New Brunswick	36,000,000	26,000,000	1,000,000	26
Quebec	360,000,000	155,000,000	3,000,000	52
Ontario	250,000,000	100,000,000	1,200,000	83
	671,000,000	306,000,000	5,500,000	56

It is a matter of common knowledge that the pulp and paper industry will increase in Eastern Canada for some time to come, which means that there will be a corresponding decrease in the length of the timber supply above calculated. On the other hand, increasing prices and demand will eventually bring into use much of the stand that is now classified as unavailable. On the whole, it may be conservatively said that even if the Eastern Canadian Provinces began now upon an adequate scale to put all their forest land upon a permanent producing basis they will not get forest crops any sooner than they will be required for the basic industries of pulp making and lumber.

The paper industry in the East is facing two alternatives if it is to be permanent: First, the utilization of other species, and second, the growing of pulpwood—and it will have to accept both.

Notwithstanding the fact that 60 per cent of the area of the Northeastern States is better adapted to timber growth than any other purpose, the best we can hope for is a pretty severe stringency during the period between the comparative exhaustion of the present supply of pulpwood and the coming on of the new supply brought about by general forest protection and reforestation through the co-operation of National, State and private agencies.

The tremendous investments required in the development of great water powers, the construction of large mills, and the installation of exceedingly heavy and expensive machinery necessitate an operation of 40 years or more, in order to bring plant overhead down to a reasonable factor in production costs. This is the reason why the pulp and paper manufacturer must take a long look ahead in providing for his raw material.

It is particularly encouraging to note, according to the Forest Service report in response to Senate Resolution 311, that fifteen forest owners hold some 5½ million acres, or nearly one-quarter of the forest area of Maine, New Hampshire, and Vermont, and that in addition to this the National Forests in the White Mountains exceeds 400,000 acres. This is an excellent basis for forestry operations.

The present consumption of pulpwood in these three States averages about 1,700,000 cords yearly. An annual growth of one-third of a cord of pulpwood on the acreage held by these fifteen owners would equal the present consumption. It is not unduly optimistic to expect an ultimate annual growth of pulpwood at this rate if conditions of forest protection and taxation become such as to make it a safe and profitable undertaking for corporations to carry on long-time operations of this sort in order to provide raw material for their mills.

In fact, it appears that pulpwood costs and values have now reached a point where the professional forester with practical experience can prove to the paper manufacturer that he can seriously think and plan for the growing of his future supply of timber.

We can, with some degree of confidence, make the following general assumptions for pulpwood forest growing over large areas:

1. A cost of $15 per acre for land and the stocking of it with young trees, either through planting or natural reproduction.
2. An annual protection charge of 5 cents per acre.
3. Six per cent. compound interest on the investment.
4. We are justified in assuming that in the near future we are likely to have a cutting tax instead of an annual tax upon private land devoted permanently to forest growing, and we are setting a tax of this kind high enough when we make it 16 2/3 per cent. upon the final yield, which is equivalent to an annual tax of 1 per cent. upon an actual value with a 6 per cent. interest rate.
5. We are also justified in assuming, under good conditions, a yield of 20 cords per acre at the end of 40 years.

Applying the usual formulas of forest finance, we get $10 per cord as the cost of growing this pulpwood stumpage.

Anyone who is at all familiar with timber matters in the North-eastern States will have no hesitancy in saying that pulpwood stumpage will be worth more than $10 a cord long before it can be grown.

This is the real basis for belief on the part of foresters that the time has now arrived when they can demonstrate to hard-headed business men that in forestry and not destructive logging lies the future of the great industry of paper making.

A NEW JOURNAL FOR PULP AND PAPER MAKERS.

The Society of Pulp and Paper Chemists and Engineers in Germany is now represented in the literature by its own organ, called Zellstoff und Papier, which is a monthly publication of approximately 32 pages. From an examination of the contents of several copies, it is evident that this will prove a valuable source of information especially for those engaged in research work in the pulp and paper industry. The contributors are men of wide reputation who have distinguished themselves in this line of work. The journal is divided into a chemical section and a mechanical section. The editor of the chemical part is Dr. Karl G. Schwalbe and of the mechanical part Dr. Siegmund Ferenczi. The subscription price for foreign countries is 18 marks. Remittances should be sent to the Karl Hoffman Press, Papierhaus, Berlin, S.W.11.

RIORDON BALANCE SHEET.

A balance sheet of the Riordon Company, Limited, has been sent out by the company. This statement, which stands as of July 31, shows the large balance of assets over liabilities. The statement shows current liabilities as of that date standing at $13,317,817, and current assets amounting to $9,371,184, or an excess of current liabilities of $3,946,633. Total assets amount to $80,070,020.

The most interesting portion of the statement, is, of course, the current liabilities section. This shows that the company has bank and other loans secured amounting to $5,754,522, made up as follows:—Bank of Montreal, $1,990,419; Imperial Bank, $3,246,235; Royal Securities Corporation, $104,036; and 1st National Bank, U. S. A., $413,831. There is also an unsecured loan of $150,000. International Trust Company. A bank overdraft of $3,659 is also shown. Accounts and and bills payable stand at $5,524,023; jobbers open accounts and notes, $260,972; bond and mortgage interest accrued, $140,113; Dominion Government business profits tax, income tax, and interest, $838,419; Provincial Government stumpage, 1910-20 cut and interest, $127,953; a reserve for the 1920-21 cut of $299,326; capital tax and interest accrued, $96,941; ground rent, 1921-22, $24,375; and accrued liabilities, $95,697. Deferred liabilities include dividend due April 1, last, $157,500. Reserves include: depreciation, $1,581,702; insurance, $255,327; exchange, $214,314; and bad and doubtful accounts, $47,902; special reserve for contingencies and depreciation of properties at date of organization, $2,902,617.

The current assets include: investments in logs, manufactured products, etc., $8,680,040; accounts, receivable: trade, $100,860; Riordon Sales Company, $516,787; Ticonderoga P. & P. Co., $7,080; sundries, $43,293. Deferred assets include: due from directors $157,273; Victory bonds deposited with Quebec Government, $9,394; coal, 17,943; pulpwood, $14,812; freight suspense, $19,389; and sundry advances on logging operations, $45,749; insurance paid in advance, $122,477; taxes, $46,738; miscellaneous suspense debts, $918,765. Contingent liabilities include: customers notes under discount, $116,754; W. C. Edwards & Co. guarantee Gatineau Co., $478,554; and Ontario Government re Riordon Annex Housing Co., $125,000.

The rest of the statement speaks for itself. The condensed figures are presented herewith:

Assets.

Properties	$57,337,694
Gatineau invest	9,746,799
Inv. in other cos.	1,372,576
Sub. Co. advances	119,596
Invest. in trust	869,632
Total	$69,346,297

Current Assets.

Invest. of logs	$ 8,860,040
Accts. rec.	668,830
Working funds	15,019
Cash	7,294
Total	9,371,184
Deferred Assets	264,569
Def. to operations	169,215
Suspense	918,765
Contingent	720,308
Total assets	$80,070,020

Liabilities.

8 p. c. 1st pref. stk.	$10,000,000
7 p. c. convt. pref	10,000,000
Common stock	27,000,000
Funded debt	5,930,000
Riordon P. & P. Bds.	1,828,800
6 p. c. gold bonds	3,987,500
Mortgages	2,739,700
Total	$61,486,000

Current Liabilities.

Secured loans	$ 5,754,522
Unsecured loan	150,000
Bk. overdraft	3,659
Payables	5,524,023
Open acts., etc	260,972
Int. accrued	140.113
Taxes, etc. due	838,419
Stumpage dues	127,953
do. reserve	299,326
Capital tax	96,941
Ground rent	24,375
Accruals	95,697
Divid. due	1,818
Total current	$13,317,817
Deferments	$ 157,500
Reserves	2,099,245
Spl. reserves	2,902.617
Surplus	106,840
Total	$80,070,020

MRS. EDDY LEFT $3,500,000.

Ottawa — The Presbyterian Church of Canada, McGill University and Dalhousie University are among the chief beneficiaries of the estate of the late Mrs. E B. Eddy, of Hull.

The will shows that the deceased lady left an estate of three and one-half million dollars. The majority of the estate consists of personal property. bank and other stocks, bonds and real estate.

To the Presbyterian Church of Canada the sum of $200,000 is bequeathed, while McGill University receives the same amount for establishment of a chair or chairs to be known as the E. B. Eddy chair. The grant of half a million dollars to Dalhousie University is to be continued and the remaining unpaid instalments, which amount to around $185,000, are to be continued and paid off out of the estate.

Other beneficiaries of the will are: Robert T. Sheriff, a brother, 1,007 shares of stock in the E. B. Eddy Co., and the Eddy house and contents; a hospital in Newcastle, N.B., $25,000, with provision that if $25,000 or more is left out of the residue of the estate, the hospital receive half of the surplus, while the widow's and orphans' fund receives the other half.

Five thousand dollars is left to the schools of Chatham, N.B.

Mrs. E. J. Richardson, of San Diego, California, a sister, is given a life estate and the interest of $350,000 worth of war bonds.

Mr. William Whyte has returned to Montreal from a successful trip to the Orient. He reports a very enjoyable experience and will very soon be calling on the trade in the interests of Ayer's Felts and Niagara Wires.

Technical Section

REVIEW OF RECENT LITERATURE

A-3. Bleached Esparto Pulp. E. ARNOLUD, **Rev. Univ. Papeterie,** iv (April, 1921). Notes on the nature, qualities, and use of bleached esparto pulp. A. P. C.

A-3. Uses of Papyrus. Paper, xxviii, 6 (April 13, 1921). Brief historical sketch. A.P.-C.

A-7. Evaluation of Lime by Causticizing Test. CARL MOE, **Paper Trade Journal,** lxxii, 16; **Paper,** xxviii, 7 (April 20, 1921). Report of the sulphate pulp committee of T.A.P.P.I. Brief study of the miniature causticizing test for evaluation of lime proposed by Martin L. Griffin and consisting in boiling a weighed quantity of the lime to be tested for one hour with a slight excess of soda ash (See **Paper**, xix, 4). Comparative results may be obtained within a wide variation of concentrations. By continuous boiling 63.2 per cent of the total amount of lime was converted into carbonate after thirty minutes, and 65.0 per cent after forty-five minutes. One hour's boiling apparently brings equilibrium between the reacting bodies under the conditions of the experiments. When the solution was brought to a boil and then agitated without further heating, the rate of cooling had a very marked influence on the causticity. In this special case the lime was rather hard burnt; and it is very likely that a softer burnt lime would have entered into a more complete reaction below the boiling point, if thoroughly agitated. The test might therefore perhaps give an indication as to whether the burning has been carried to a point to make a desirable product for causticizing purposes by noting the equilibrium at and below the boiling point.—A. P.-C.

A-12. Casein Used in Coating Paper. CLARKE MARION, **Paper,** xxviii, 7; **Paper Trade Journal,** lxxii, 16; **Paper Mill,** xliv, 16. Outline of the methods of manufacture of casein, and of the methods of determining solubility, strength, moisture, color and odor, acidity, insoluble matter, ash, alkali, starch, viscosity and grease.—A. P.-C.

B-3. Forest Conservation and Perpetuation. Pulp and Paper, xix (May 12, 1921). A plea for scientific forestry in Canada, and especially for proper fire protection and for the putting of the Canadian government railways under the forest protective rules of the railway commission. A. P.-C.

B-9. National Control of Forest Devastation. F. E OLMSTED, **J. For.,** May, 1921, p. 468. An analysis of the new Capper bill, now under consideration in the United States Senate. This bill provides for national control of the prevention of forest devastation, as contrasted with the Snell bill, under which the principal elements of control would be furnished by the respective States. See comments on the Snell bill, by H. A. REYNOLDS and E. A. SHERMAN at pages 479 and 494 of the same issue.—C.L.

B-9. Ontario's Self-Renewing Gold Mine. ROBSON BLACK. **Can. For. Mag., April, 1921, p. 223.** A discussion of the economic importance of its forests to Ontario—C.L.

B-9. Forestry in Relation to Land Economics. W. D. STERRETT, **J. For.,** March, 1921, p. 224.—C.L.

B-9. National Needs and Sustained Annual Yield of the Forest. RUSSELL WATSON, **J. For.,** April, 1921, p. 390. Predicts that the present virgin stands of timber in the United States will be practically gone in 1980 and states that the outlook for adequate timber supplies for the near future is not very encouraging. —C.L.

B-10.. Decay of Wood as Influenced by Moisture. WALTER H. SNELL, **Pulp and Paper,** xix, (May 19, 1921). Outline of what is known regarding the air and moisture relations of fungi which cause decay of wood. Results obtained by Muench in the course of a long series of experiments upon the fungi which cause sapstaining or bluestaining of sap lumber and also upon several fungi which cause decay, showed that none of the fungi of either group could invade fresh (i.e., green) sapwood, which contained 50 per cent of water (equivalent to 143 percent of water calculated on the oven-dry weight of the wood). As the wood was dried, it was found that the fungi invaded the wood more deeply and did more damage the drier the wood, up to a certain limit. He failed to point out that the actual percentages which he reported hold only for woods of about the same density as those he used and do not apply to lighter or heavier woods. Results obtained by Snell on loblolly pine sapwood are very closely in line with those of Muench on Scotch pine. The greatest amount of decay occurred between 33 percent and 42 percent. From 42 percent on, the amount decreased. At 50 per cent there was little decay, and none at 60 per cent. The values representing the upper moisture limits for decay will vary inversely with the density of the wood. Snell's experiments with five different fungi, four of which occur on pulpwood, show that 60 per cent of water in the logs will eliminate all danger of serious loss from decay. A constant spray or "artificial fog" will keep the logs sufficiently wet to protect them from both fire and decay. Logs so wet will mould on the outside, but moulds do no damage to wood beyond discoloring it superficially.—A. P.-C.

B-0. Forestry in British India. T. S. WOOLSEY, jr., **J. For.,** May, 1921, p. 550.—C.L.

B-0. Present Day Forestry in Austria. F. S. BAKER. **J. For.,** May, 1921, p. 558.—C.L.

B-0. Forest Research in Canada. CLYDE LEAVITT. **Can. For. Mag.,** Nov. 1920, p. 519. Discusses forest research with special reference to the projects inaugurated by the Commission of Conservation. C.L.

B-0. Rewards for Trained Foresters in Canada. C. D. HOWE, **Can. For. Mag.,** Nov., 1920, p. 526.—C.L.

B-0. Forest Experiments in New Brunswick. W. M. ROBERTSON, **Can. For. Mag.,** Feb., 1921, p. 81. Describes forest research work on the limits of the Bathurst Lumber Company through a cooperative arrangement between the New Brunswick Forest Service, the Bathurst Lumber Company and the Commission of Conservation.—C.L.

B-0. Effect of Forests on Flow of Streams. Can. For. Mag., April, 1921, p. 218. Discusses the results of experiments conducted at the Swiss engineering station at Zurich.—C.L.

B-0; R-11. Second National Conference on Education in Forestry. J. W. TOUMEY, **J. For.**, Feb., 1921, p. 167.—C.L.

C-6. Saw Fitting Tool. Can. patent No. 210,037, GUSTAF ANDERSON, Atlin, B.C., April 5, 1921. Claims allowed 19.—A. P.-C.

C-6. Saw Straightening Anvil. Can. patent No. 210,169, THOMAS WEBB, Vancouver, B.C., April 5, 1921. Claims allowed 7.—A. P.-C.

D-4. Hall Process for Groundwood. Report of groundwood committee, T.A.P.P.I. W. A. MUNROE, chairman, **Pulp and Paper**, xix (April 28, 1921); **Paper Trade Journal**, lxxii, 16; Paper Mill, xliv, 16. In this process the surface of the stone is burred giving grooves through which the fibers ground in one pocket can escape regrinding under the other succeeding pockets, thus preserving intact the particles of fibers necessary to the formation of a perfect sheet of paper. It results in an increased yield of about 250lb of pulp per cord of wood, and is a considerable curtailing of the amount of sulphite required (up to 100 per cent in certain cases) owing to the better quality of the fibers. The paper gives entire satisfaction in the printing press and is generally preferred to paper made in the usual manner with a much greater proportion of sulphite. Steam cooking before grinding gave a good grade of pulp; but the additional labor involved, the expense of live steam, etc., rendered this too expensive.—A. P.-C.

F-5. Rinman's Modified Sulphate Process. BROR N. SEGERFELT, **Paper**, xxviii, 7; **Pulp and Paper**, xix, 452-3 (April 28, 1921); **Paper Trade Journal**, lxxii, 16. In the Rinman process the wood is cooked with weak caustic soda solution in the presence of a weak reducing material, preferably mercury, the temperature not exceeding 170° Cent. After cooking, the pulp is washed in ordinary diffusers, and the black liquor evaporated to about 35° Bé and at 60° Cent. Sufficient fresh caustic is added to compensate for losses, and also lime is added, and the mixture distilled at not over 500° Cent., in the presence of a small amount of steam. (See Br. patent No. 116,288, **Pulp and Paper**, xvii, 1072, Dec. 11, 1919). The advantages are: entire elimination of bad odors; the yield of pulp is as high or higher and the quality better than with the ordinary sulphate process; no hard scales on the heating surfaces of the evaporators or concentrators; loss of alkali of only 2 to 3.5 per cent of the pulp produced; lower lime consumption. Any quality of pulp desired may be obtained by suitably varying the conditions of cooking.—A. P.-.

G-4; M-0. Weightometer for Pulp. E. J. TRIMBEY, **Paper**, xxviii, 7; **Paper Trade Journal**, lxxii, 16; **Paper Mill**, xliv, 16. Description of the new Allen weightometer, which is designed specially for measuring slush pulp, and which may also be used (with appropriate changes in design) for weighing chips, acid, grain, coal, etc. It consists essentially of a hexagonal rotor, the shaft of which is carried in ball bearings which are attached to two scale beams, one on each side of the vat containing the rotor. The beams are supported on knife-edge bearings, and the weight of the rotor and the stock it contains is counterbalanced by weights at the other ends of the beam. When sufficient stock has been delivered into the top compartment (of the six) of the rotor to just overbalance the weights at the ends of the beams, the latter pivots on the knife-edge bearings and the rotor is slightly depressed, thereby releasing a finger on the compartment from a stop in the end of the vat. The rotor turns forward, delivering the stock from the filled compartment and bringing the next compartment in position to be filled. Suitable dashpots and trigger absorb the momentum and cause the rotor to come to rest without too much shock, and prevent the rotor from rotating backwards. The weightometer is used in conjunction with a Trimbey stock consistence regulator, so that the stock delivered to the apparatus is always of the same consistence, within very narrow limits.—A.P.-C.

H-5. Effects of Variables on Bleaching Efficiency. GEORGE K. SPENCE, **Paper**, xxviii, 7; **Paper Trade Journal**, lxxii, 16. Report of the soda pulp committee of T.A.P.P.I. Bleaching tests carried out have shown that increasing the consistence improves the color and shortens the bleaching time, increasing the bleaching temperature up to 120° Fahr., improves the color and shortens the bleaching time, while increase in temperature much beyond this point will shorten the bleaching time but lower the color.—A.P.-C.

K-7. Two-roll Beater. Fr. patent No. 514,865, JULES EUGENE BROTEL, (Isère), France. **Papeterie,** xliii (April 25, 1921). The rolls are placed in the two ends of the beater and the driving pulleys of the rolls are placed in a space between the rolls, which replaces the midfeather.—A. P.-C.

K-8. Coloring Paper. Patent applied for by JOSEPH TAVERDET, (Seine) France. **Papeterie**, xliii (April 25, 1921). The colored solution is sprayed on to the paper web at a point situated preferably between two sections of the driers.—A. P.-C.

K-10. Control of Alum Content of the Tub Sizing Bath. P. W. CODWISE, **Pulp and Paper**, (May 12, 1921). The method consists essentially in titrating the size bath with decinormal caustic soda using thymol blue (dibromothymolsulphothalein) paper as outside indicator. A correction factor must be applied, which is determined by titrating a sample of the alum used in preparing the size bath by the volumetric method previously published by the author (see **Pulp and Paper**, xviii, July 8, 1920) and also under the conditions of this test with brom thymol blue. A correction must be applied for the original alkalinity or acidity of the gelatin that is employed. Blue litmus paper may be used for this work, but the errors involved are much greater than with brom thymol blue. The bearing of this test on the physico-chemical properties of the tub sizing solution and of the test paper are noted. A graphical chart which eliminates the larger part of the calculations is included.—A.P.-C.

K-12. Couch Roll. Fr. patent No. 512,106, CHRISTIAN SEYBOLD, Germany, Oct. 6, 1920. Papier, xxiv (March, 1921); **Papeterie**, xliii (March 25, 1921). The water is removed from the inside of the roll by means of curved rotating blades, with or without the aid of suction.—A.P.-C.

K-12. Dandy Roll. Fr. patent No. 513,345, HUGO SCHMEIL, **Papeterie**, xliii (March 25, 1921). The roll is mounted in ball bearings which are pivoted in open forks. The stems of the latter rest each on a plate supported by a series of relatively heavy springs which in turn rest on another plate, the two plates being placed in a suitable housing. To obtain a more silent operation, springs may also be made to act on top of the ball bearings.—A. P.-C.

(continued on p. 888)

PULP AND PAPER NEWS

Every week evidence is being brought to the notice of the Ottawa authorities and the Air Board officials of the invaluable work, in the direction of fire patrol and fire-fighting that is done by sea-planes. A recent report from the Manitoba Fire Inspector, regarding the work being done in the Lake Winnipeg section, includes a statement by the District Fire Ranger, operating from Victoria Beach with Major Basil Hobbs, in charge of the Air Board station there, to the effect that he was "satisfied that the Lake Winnipeg section would now get the protection its timber supply warranted," as a result of the aerial patrols carried out by Major Hobbs. An instance was given of the value of this work is that of a fire, spotted 40 miles inland at four o'clock one afternoon, which was being successfully fought by fire-fighters, transported by sea-plane, at six o'clock the next morning.

A new lumber concern is with headquarters in Port Arthur, Ont., is starting up. Lumber, timber and pulpwood will be dealt in by this concern, which is taking the name of the Thunder Bay Lumber Company, Ltd., and which will acquire the assets and properties of the Thunder Bay Lumber and Fuel Company.

President Harding attached his signature on Tuesday in last week to the Underwood resolution authorizing commission negotiations with Canada over the importation of wood pulp for printing paper. Pulp and paper men here, with whom the writer has spoken with reference to this matter, fail to see what negotiations with the Dominion Government can effect, if the American object in view is to abrogate the regulations stipulating that wood cut on Crown lands in Ontario and Quebec shall be manufactured in this country. For such regulations and matters of purely Provincial concern—indeed, there are no Dominion regulations of any kind to that effect—and therefore any negotiations with regard to them must be with the Provincial Governments. Moreover, as these, Provincial rights are very properly regarded as invaluable, in the present condition of our forests, it is difficult to conceive what inducement for their surrender can be offered to the Provincial Governments.

This week the writer had a talk with some parties who have lately been at Dixon Creek near Haileybury, Ont., where the new fifty ton groundwood mill of the Temiskaming Pulp and Paper Company is going up. They say that this will be a first-rate structure, which will have the roof on it this fall, ready for the installation of the equipment. The work has proceeded very rapidly and satisfactorily. The Temiskaming Pulp and Paper Company has for its President, Mr. Alexander Fasken, a Toronto Lawyer, of the firm of Fasken, Robertson, Chadwick and Sedgewick, who, by the way, has recently been made a K.C.

A Michigan concern, by the name of the Detroit Sulphite Pulp and Paper Company, has recently secured an extra Provincial license for the carrying on of business in the Province of Ontario.

Great interest was taken in Toronto in pulp and paper circles in general, in the meeting of the Riordon Company's creditors which took place last Friday. There was some surprise expressed that no official statement was available at the close of the meeting, which was confined to actual creditors of the Company. It is understood, however, that the new financing plans which were submitted will, when offically formulated, provide for a sum of between $8,000,000 and $10,000,000 for the purpose of carrying the Company's indebtedness, and placing it in a position to carry on, and that, as part and parcel of such an arrangement, the present shareholders of the Company will lose all their holdings, but will retain the right to subscribe ahead of other investors to the new issue of bonds, such bonds to carry with them a bonus issue of new stock. As to the prospect of these plans successfully maturing, opinions which one hears expressed are of widely differing tenor. In part, their ultimate success is held to hinge upon the question of whether or not a large payment, due from the Company to the Edwards interests this month,—the amount in question is no less than one $1,500,000 can be met. This payment, it appears, is due on the Company's purchase of the Edwards timber limits. In those limits, the Company already has a large equity, it seems, as a consequence of previous payments amounting, it is said, in the aggregate, to over $5,000,000, but the title does not pass to it until the payment of the $1,500,000 due this month has been made. It will thus be seen that, if this sum is not forthcoming this month, the Company stands liable to a very grave loss. There is no reason to believe that the interests concerned will not in all likelihood, agree to a further extension of time on this payment—one such extension, it is stated, has already been granted.

The Canadian Barking Drum Company, of Toronto, reports the sales through its Toronto office of another drum to the Spanish River Pulp and Paper Mills, Ltd., which has previously purchased from it a very large number of drums, and also of a drum to the Dryden Pulp and Paper Company. The Chicago office also reports contracts for drums awarded by the Racquette River Pulp and Paper Company and the Consolidated Water Power and Paper Company.

Mr. James Simpson, the well-known Socialist, addressed a large meeting of striking printers and their wives, held in the Labor Temple, Toronto, the other day, gave a review of the strike situation in Toronto from its start down to the present. He stated that, at present, there are some 875 employees of local printing establishments out on strike, and that more than $16,000 a month—which is supplemented by a few dollars a week per man from the local Union's funds—is being paid out by the international fund in the form of strike pay.

Very satisfactory reports are received of the operations at the groundwood plant of the Fort William Paper Company. It is stated that the plant is working to capacity with plenty of orders booked and business in sight. Colonel Thomas Gibson, of Toronto, is the President of this company.

Last week, the striking printers at Ottawa, belonging to the Typographical and Printing Pressmen's Unions, which have been on strike since the 1st of June for the forty-four hour week, published, for the first time, an official two-sheet organ entitled "The Printers'

Inkling." It contained the announcement that it is endorsed by the Trades and Labor Council, and is supported by 9,000 working men with a purchasing power of more than $200,000 a week. It is issued from the Printers' and Pressmen's Clearing House, and is bilingual in character. It carries a quantity of advertising and solicits public and private printing.

In Saint Luke's Presbyterian Church, Bathurst, N.B., at 9.30 on the evening of August 3rd., Miss Mary MacLean, daughter of Mr. Angus MacLean, became the bride of Mr. Robert Edwin Sproule, of Ottawa. The ceremony was performed by the Rev. A. D. Archibald.

The capital stock of The Nashwaak Pulp & Paper Company, Limited, has been increased from seventy-five thousand dollars to eight hundred and twenty-five thousand dollars by supplementary letters patent. The increase is made by the addition of one hundred and fifty thousand shares to be sold at five dollars a share and to be classed as preference shares.

Large shipments of groundwood pulp are being sent by the Fort William Pulp and Paper Co. to the Laurentide Co. The new mill at Fort William is reported operating continuously and successfully.

A despatch from Port Arthur reports that plans are under way for refinancing the Kaministiquia Pulp Co. in order to put it again in commission by the bondholders.

A Forestry Convention will be held at Vancouver and Victoria next September.

An extensive tour of Ontario by the Forest Exhibit Car commenced July 21st and will cover practically the whole of the forested areas along railway lines. A unique method of advertising the coming of the Exhibit Car was employed in the Lake St. John region where aeroplanes acted as advance agents and by flying low over many villages dropped hand bills by thousands.

Ten thousand copies of a new Forest-Book in English and 10,000 copies in French are being prepared by the Canadian Forestry Association for presentation to senior Boy Scouts and to senior boys in the French-speaking communities of Quebec.

The Forest Exhibit Car, with French and English-speaking officer aboard has just completed a successful tour of the Quebec and Lake St. John Railway. In addition to the stream of visitors to the car through the day, evening meetings were held at which addresses on forest protection were given and motion pictures shown. Parish priests and other local leaders took a prominent part in these meetings. The evening attendance varied from 650 at such points as Metabetchouan and St. Gedeon, to over 3,000 at Chicoutimi. At the latter place the grand stand of the Fair Grounds was used by the audience and a special platform erected for the speakers.

The pulp mill of the Bear River Pulp and Paper Co. has been closed for lack of water. The rain fall this year has been only about 1/3 of normal.

At a meeting of the Advising Board of the N. B. Department of Lands and Mines, this week, the Pijipscot Pulp Co. asked permission to export timber infested with the spruce bud-worm. A recommendation will be made to the Lieut.-Governor.

RECEIVER FOR NEWSPAPER.

Announcement of the appointment of the Union Trust Company of Detroit, as receiver for The Detroit Times, an evening newspaper, has been made following a petition for involuntary bankruptcy, filed in Federal Court Saturday.

CARL GUSTAF NILS HAMSON.

On the 13th of August, K. Gustaf N. Hanson, a well known sulphite engineer, passed away in Montreal.

Born in Sweden 1880, and coming from the old sulphite maker family, of which Magnus and Nils, his uncles, and Magnus Jr., his brother, also are members, he graduated as a mechanical engineer from Chalmers Technical Institute of Gothenburg, Sweden, and thereafter worked as engineer in the construction and operation of several Swedish sulphite mills.

Mr. Hanson came to the United States in 1913 and entered the employ of the New York & Pennsylvania Paper Co., Johnsonburg, Pa., where he remained until 1915 when he was appointed general superintendent of the St. Lawrence Pulp & Lumber Corp., Chandler, Que.

In the fall of 1916 Mr. Hanson was made chief engineer of the Ha. Ha. Bay Sulphite Co., Port Alfred, Que., and supervised the construction of this mill. When the mill commenced manufacturing, early 1918, he was appointed mill manager and remained in that capacity until the fall of 1920 when he took up the position of assistant to the local manager of the Kipawa plant of the Riordon Co. Ltd. The great success of the Ha. Ha. Bay Sulphite Co., starting the mill and getting up to full production in record time, was to a large extent due to his efforts.

He was considered as one of the best sulphite engineers in Canada and as a man of sterling qualities, whose loss is deeply felt among a great number of friends. He leaves a widow and little daughter.

JAMES IMRIE WAS 67.

Death came suddenly to Mr. James Imrie, manager of the Montreal branch of W. J. Gage and Company, stationers, when he was spending a week end at Morin Heights. When he left Montreal on Friday afternoon last after attending to business as usual, he was apparently in good health, but on Saturday morning he complained to his family of a pain in his chest. Medical aid was called in, and it was thought that there was nothing beyond an attack of indigestion. After lunch, however, while resting, Mr. Imrie suddenly collapsed and died before help could be rendered.

The late Mr. James Imrie was born in Glasgow, Scotland, and was 67 years of age. Coming to this country about fifty years ago, he settled down in Toronto in the stationery business with Warwick Brothers of that city. Over twenty-five years ago he came to Montreal as representative of W. J. Gage and Company, Toronto, stationers, and has held the managership for them ever since.

Mr. Imrie is survived by his widow.

DONNACONA CO. SECURES LIMIT.

Timber limits located at the watershed of the Jacques Cartier River, in Montmorency County, have been purchased by the Donnacona Pulp and Paper Co., from the Province. The company was interested in these limits on account of the necessity of supplying their mills with timber the whole year round. The price of adjudication was set at $700 per square mile. The stumpage dues will be paid at a rate of 5 cents over the minimum fixed by Order-in-Council in 1920.

The River aux Outardes timber limits, which were also on sale, had no bidders and the same was the case in regard to the Manicouagan water power, also offered for auction.

(continued from p. 885)

K-12. Improved Suction Boxes. Fr. patent No. 511,466, JACOB HEESS, Germany, and ROBERT JOSEPH MARX, England, Sept. 24, 1920. **Papier,** xxiv (March 1921); **Papeterie,** xliii, (March 25, 1921). The suction boxes are placed side by side without any space between them. It is claimed that in this manner better dehydration is obtained with less suction. The power consumpton and the wear on the wire and on the machine are less, and the quality and uniformity of the paper are improved.—A.P.-C.

K-14. Paper Winders. Fr. patent No. 479,857, LEON THIRY, Belgium. **Papeterie,** xli (May 25, 1919); **Paper,** xxvii, 25)Feb. 23, 1921). See **Pulp and Paper,** xvii (Sept. 25, 1919).—A.P.-C.

K-14. Slitting and Rewinding Problems. Pulp and Paper, xiv (May 5, 1921). Brief comments on the results achieved by the Cameron Machine Company during the last ten years, in the designing of standard and special types of slitting and rewinding machines for service in the paper trade.—A.P.-C.

K-18. Fiber Board. Can. patent No. 210,056, MANLEY CHEW, Midland, Ont., April 5, 1921. As a new article of manufacture, a fiber board composed of chip waste reduced to a cooked, shredded, pressed, dried state, permeated with a suitable chemical and physical binder and waterproofed. Claims allowed 3. —A.P.-C.

K-20. Parchment and Imitation Parchment. G. SCHUMANN, **Papier-Markt,** March 19, 1921; **Pulp and Paper,** xix, (May 5, 1921). Brief description of the processes of manufacture of so-called genuine parchment paper and of imitation parchment papers.—A.P.-C.

K-23. Mottled Paper. Fr. patent No. 506,632, CHARLES CLARK ORCUTT, U.S.A. **Papeterie,** xliii, (March 10, 1921).—A.P.-C.

K-23. Coating Paper with Metal Foil. Fr. patent No. 513,342, FRITZ TSCHEIKE, Germany. **Monit. Papeterie,** lii (March 15, 1921); **Papier,** xxiv (April, 1921). —A.P.-C.

L-4. Paper Bottle. Can. patent No. 210,195, The Empire Paper Bottle Company, assignee of WALTER E. HINDLE and JOHN DICKINSON, all of New York City, N.Y., U. S. A., April 5, 1921. As a new article, a paper bottle the mouth of which is crimped, and an external band attached to the crimped material, said band being provided with a ripping member. Claims allowed 9.—A. P.-C.

L-7. Paper Textile Apparatus. A process and apparatus for making narrow slits in paper strings intended for the manufacture of sockets with collars. Fr. patent No. 512,587, EMIL JAGENBERG, Germany, Oct. 16, 1920. **Papier,** xxiv (April, 1921).—A. P.-C.

L-7. Moistener for Paper Strips Used in Textiles. Fr. patent No. 512,586, FERD. EMIL JAGENBERG, Germany, Oct. 16, 1921. **Papier,** xxiv (April 1921).—A. P.-C.

M-0. Care of Metallic Packings.. CHARLES C. HALL, **Paper,** xxviii, 6 (April 13, 1921). Comparison of Durametallic packing (made by rolling antifriction metal into thin sheets, covering with a mixture of oil and graphite, crinkling, and then rolling and compressing the sheet into a strap or bar which contains many small cells filled with lubricant) with fibrous packings, showing the advantage of the former over the latter.—A. P.-C.

N-4. Safety Features of Steam Boiler Accessories. WARREN HILLEARY, **Paper,** xxviii, 6 (April 13, 1921). A brief discussion of safety valves, water gauge glasses, gauge cocks, high and low water alarms, pressure gauges, and blow-offs. A.P. C.

O-2. Residual Aluminum Compounds in Water Filter Effluents. ABEL WOLMAN and FRANK HANNAN. **Chem. Met. Eng.,** xxiv (April 27, 1921). The reaction of aluminum sulphate with alkaline waters is a complex mobile transformation. The reaction seems to be delicately dependent upon the actual alkalinity of a water, its hydrogen ion concentration, rather than upon its potential alkalinity. The hydrogen ion concentration in its turn is regulated to a large extent by carbon dioxide equilibria. Evidence so far accumulated seems to indicate that complete precipitation of Al (OH)$_3$ takes place at a hydrogen ion concentration somewhere near the neutral point, PH 7.0, unless disturbing or buffer influences are operative. Outside of this zone of favorable alkalinity resolution of insoluble flock occurs to a greater or less degree. The appearance of aluminum compounds in filter effluent, should not be accepted as due to faulty operation, according to orthodox interpretations, but to failures due to misunderstanding of the reactions involved. This statement is given in the nature of a hypothesis, to be substantiated by further experimental evidence. If the hypothesis is found to be true, the problem of residual alumina, not only in filter effluents, but in all coagulated waters, may be attacked from a new angle.—A. P.-C.

O-3. Permutit Water Purifier. Can. patent No. 210,230, The Permutit Company, New York, N.Y., U. S. A., assignee of J. D. DIEDEL AKTIENGESELLSCHAFT, Berlin, Germany, assignee of ROBERT GANS, Penkow, Germany, April 5, 1921. A process for the softening of hard water consisting in merely passing the hard water downwardly through zeolites, then cutting off the supply of water and regenerating the zeolites by merely passing through them a solution of common salt, and washing out the salt solution, the washing being so accomplished that no pocketing of the salt solution occurs, and then passing hard water downwardly through the zeolites, and so on. Claims allowed 5.—A. P.-C.

P-4. Treatment of Acid and Alkali Burns. A. K. SMITH, M.D., manager, medical section, E. I. du Pont de Nemours & Company, Wilmington, Del., **Chem. Met. Eng.,** xxiv (April 27, 1921. Outline of the treatment used by the du Pont Company for caustic burns.—A. P.-C.

P-0. Ontario Pulp and Paper Makers' Safety Meeting. Pulp and Paper, xix (May 5, 1921). Brief account of the meeting held in Toronto, April 20, 1921, with texts of President Carruthers' and Secretary Costigane's address.—A. P.-C.

R-2. Employees' Magazines as Viewed by their Editors. ALBERT HIGHTON, editor of "Eagle A" Unity. **Paper,** xxvii, 25 (Feb. 23, 1921.) — Results of an investigation into the purpose and usefulness of company magazines for employees, in the form of replies to a questionnaire sent out to the editors of forty company publications representing various industries. —A. P.-C.

R-5. Pulp & Paper Trade of Belgium. Papier, xxiv, (April, 1921. Statistics of the importations and exportations of pulp and paper during 1919 and 1920, and also of the market values of stocks of various pulp and paper companies during the last year and of the last dividends paid by them.—A. P.-C.

INCREASED YIELDS AND DECREASED COOKING TIME BY IMPREGNATION IN THE SULPHITE PROCESS.

Experiments made on impregnation of wood chips in the Sulphite Process by the Forest Products Laboratory, Madison, Wis., and described and explained in a recent paper by Vance P. Edwardes, are well worthy of extended study and consideration by mills which make a news grade of sulphite pulp. Very excellent results were obtained in shortening the cooking time while the yield of pulp was increased to a marked degree.

Chemical examination and analysis of wood shows that the actual cellulose content, in such woods as spruce, fir and hemlock, is approximately 62 per cent., the remainder being lignin, with a very small percentage of volatile oils, etc., and not available for chemical pulp.

The cooks at the Forest Products Laboratory were on an experimental scale and under conditions of close and accurate control in a small digester holding about 80 pounds of bone dry chips. All figures for yield, acid, and bleach consumption were worked out on the bone dry weight of the wood, which is the only sound basis known. Several regular or "normal" cooks were made in order to put all of the experiments on a comparative basis.

The underlying principle involved in impregnation is to distribute the liquor throughout the pores of the wood so that in the process of cooking, all of the lignin will be removed, but as little cellulose as possible destroyed. The first experiments to obtain impregnation were made by creating a vacuum of about 20 to 25 inches of mercury in the digester after it had been filled with chips and the cover tightly bolted on. Then the acid charge was run in through the bottom of the digester, holding the vacuum at the same time. The next step was to apply about 75 pounds pressure to force the acid into the wood chips. Later, cooks were made by the application of pressure alone, and in all of the cooks, various degrees of vacuum, pressure, etc., were tried. The indications were that best results were obtained by pressure only.

The results of these experiments seem to indicate that the pulp obtained is equal in strength to "regular" news sulphite and that the color is fully as good. However, it may be possible to effect two important savings by the use of this principle, (1) Decrease in time of cook and consequently a lower steam consumption, and (2) Increase in yield from the same amount of wood with practically the same amount of cooking liquor as in the regular process.

The saving as indicated in the experiments was made by lowering the standard experimental cooking time of 8 hours to 4 hours in one case, although best results were obtained in about 6½ hours. This is nearly a 20 per cent. decrease, and can be considered as a possible average figure.

The second important feature is that by the use of varying degrees of vacuum and pressure, the percentage of yield based on the bone dry weight of the chips was increased from 46 per cent., in the "standard" cooks, to 57 per cent. and 60 per cent. in several cases. Assuming that it is possible to increase the yield to 52 per cent., this would amount to a saving of 12 per cent. This means an actual saving in wood consumption, because more pulp is obtained from the same wood.

The paper by Edwardes also mentions experiments on a commercial scale also now being tried, and they are certainly well worth the most serious consideration of any plant which makes sulphite pulp. A 10 per cent. decrease in cooking time, and a 5 per cent. increase in yield would mean a great saving to the mills, and one that appears possible with every little added expense. It will, however, be necessary to exercise close operating control and to know the bone dry weight of the chips used in order to apply this improved method and figure the savings effected.

GUMMED PAPER PRESERVES FRUIT.

Atlantic City, Aug. 11. — That gummed paper tape can be used to preserve perishable fruits and thereby greatly add to the palatability as well as to the keeping qualities of fruit, was disclosed at a meeting of the Gummed Paper Manufacturers at Atlantic City, during the convention of the National Association of Corrugated Fibre Box Manufacturers, when J. W. Webb, inspection engineer for the Container Club of Chicago told of experiments in car lot shipments.

He said that the packing of melons, apples, peaches, citrus and other fruits in corrugated fibre boxes, with gummed tape used to hermetically seal the containers, added surprisingly to the length of time in which the fruit could be kept fresh.

He gave various instances of the experiments made, and said that the time element varied according to the species of fruit being shipped. He urged the gummed paper manufacturers to note this opening for additional business.

The Gummed Paper Manufacturers Association decided to continue its present organization, and elected W. R. Lusignan of Samuel Jones & Co., Newark, N.J., Vice-President, Phillips Kimball of the Liberty Paper Company of New York was named as a committee of one to discuss with the Container Club the standardization of gummed tape.

The association agreed on a set of trade customs and a committee was named to formulate a uniform sales contract.

A NEW PAPER MACHINE DRIVE.

Due to the fact that the plant in which our first paper machine was installed has no basement and because the trusses are 40 feet above the floor line of the mill, it was found necessary to depart from the usual practice of driving the machine with belts and pulleys. After much thought and research it was decided to use a battery of variable speed transmissions. The machine itself is driven in six separately controlled sections, which in turn, are so installed as to make a single unit drive controlled for direct speed change through a master variable speed transmission. This controls smaller machines in machine drive line.

The use of variable speed transmissions as a paper machine drive is a big departure from ordinary custom. After putting the machine through the most severe tests of every kind in an effort to discover whether or not such a drive was practicable, it was found satisfactory and successful under all conditions.—From The Valley Iron Works "Beater."

Messrs. Tuxor and Kennely, chemical engineer and forestry manager for the Northwest Paper Co., Cloquet, Minn. were recent visitors at the Belgian Industrial Co. at Shawinigan Falls.

Some folks knock so loud they can't hear the invitation to come in.

UNITED STATES NOTES

A quick return to prosperity in the paper industry is forecast in the monthly bulletin to members issued last Thursday by the American Pulp and Paper Association. "The entire trend of reviews of business," says the bulletin, "considering the fact that the paper industry was not an extensive participant in the plant enlargements seen in other industries during and after the war, gives the paper industry every reason to feel a decidedly optimistic spirit. The paper industry, not having been inflated by war conditions to the extent notable on other industries, is not subject to the same degree of deflation evident elsewhere. The smoothing out of the labor situation, lower prices for raw materials, with constantly increasing per capita demand for the product of their mills, should encourage paper manufacturers to prepare for better and more stabilized business than ever before in history after the months of more or less slow recovery which were inevitable."

For the year ended May 28, 1921, the United Paper Board Company, Inc., reports a net profit, after taxes, charges, depreciation, etc., of $456,668, equivalent after preferred dividends, to $3.64 a share earned on the $10,105,000 common stock outstanding, this compared with a net profit of $840,010, equal to $8.11 a share earned on the $9,186,400 common stock outstanding in the previous year. Mill earnings totalled $731,041, against $561,741. Cash accounts showed $422,474, and accounts and notes receivable $567,966. Sidney Mitchell, president, in his report to stockholders said: "Under the sinking fund for purchase of preferred stock the company purchased 2,426 shares of preferred stock, and at the annual meeting of stockholders last November, the authorized preferred stock was reduced from $2,500,000 to $1,500,000. The suit against this company in the sum of $1,500,000 instituted by a committee of collateral trust bondholders of the United Boxboard and Paper Company for a deficiency under foreclosure has been dismissed."

Statistics compiled by the Bureau of the Census show that daily newspapers printed in the United States total annually 11,270,559,316 copies, an average of one copy a day for every 3 1/5 persons of the country's total population. Total circulation of the country's 20,431 newspapers and periodicals aggregated 15,475,145,102 copies for the year, an increase of 7 per cent per issue in five years. That includes daily, Sunday, tri-weekly, monthly, quarterly, and all other newspapers and periodicals. The printing and publishing industry's products were valued in 1919 at $1,528,856,503, an increase of 116 per cent. in five years.

The Underwood resolution, authorizing commission negotiations with Canada regarding importation of wood pulp for print paper, was signed last week by President Harding. Appointment of the American Commissioners will be delayed, it is reported in Washington, until Great Britain has assented to the proposal. The State Department is understood to feel that such a negotiation could not well be undertaken with a British dominion without full approval from London which is expected in the near future. It is said in Washington that Frank Lyon Polk of New York, Under Secretary of State in the Wilson Administration, will head the commission. The name of Victor F. Lawson, owner and publisher of the Chicago "Daily News," has been mentioned as one of the probable five members of the Commission. Membership on the commission is purely honorary and draws no salary. The appropriation for carrying on this investigation has been cut from $50,000 to $10,000.

The Union Bag and Paper Company has declared the regular quarterly dividend of $2 a share, payable to stockholders of record on September 3. It is estimated that the company's pay-roll will be reduced approximately $500,000 yearly by the settlement of the wage question with paper mill workers. The company's mills are running about 60 per cent. of capacity, and its newsprint subsidiary the St. Maurice Paper Co., is operating at 100 per cent. capacity.

O. M. Porter, Secretary of the New York Section of the American Society of Foresters, has been made secretary of the Glazed and Fancy Paper Manufacturers Association. The place has been held by one of the manufacturers, and as it has been found that it required more time than could be given by a man otherwise occupied, it was deemed best to have a man in the position who could give his entire time to the work.

The old Continental building in Ogdensburg, N.Y., will again be put into use in a short time when the Ogdensburg Paper Mills, Inc., opens it as part of its new plant. The grinders of this company were set in motion recently, beginning operations on the making of the first wood pulp ever manufactured in Ogdensburg. The Continental building has been lying idle for years and its utilization is due entirely to the enterprise of James A. Outterson of Carthage and F. A. Augsbury of Ogdensburg who have been the prime movers in the organization of the Ogdensburg Paper Mill corporation which promises to be one of the live wire business institutions of Ogdensburg.

PULP MILL EXPLOSION FATAL.

Mechanicsville, N.Y., August 22.—Five men were killed and a sixth injured, probably fatally, by the explosion this afternoon of a battery of three high pressure boilers in the plant of the West Virginia Pulp and Paper Company. The force of the explosion, the origin of which is not known, tore the roof from the building and hurled it into the Hudson River, 100 feet away.

TERRA NOVA MILL DELAYED.

The Twillingate, Nfld., "Sun" says, "In conversation with Mr. Baird we gather that work is somewhat delayed at the Terra Nova property owing to the exchange situation. The Norweigan Kroner worth normally about 28 cents today brings only 14 when expressed in Newfoundland currency. Last winter's cut is now all out to the last "steady," and contains besides pulp wood about a million feet of saw logs. The walls of the mill are now built and the paper storage building roofed, while a large steamer recently landed about 400 tons of machinery of various kinds including the digesters."

The Markets

CANADIAN TRADE CONDITIONS

Toronto, 20th August. It is pleasing to be able to report that, during the last few days, business, in a good many lines of the paper industry has shown signs of picking up considerably. Of course it is just possible that this brisking up of business may turn out to be somewhat in the nature of a "flash in the pan," and in any case, it is too recent for one to build confidently on it. But, all the same, it looks, at the moment, to be too wide in the scope for it to be purely spasmodic and temporary in character. More than one man prominent in the industry has told the writer that he should not be surprised if it turns out to be the beginning of the revival of the paper trade which, all through the past months of depression, has been steadfastly looked for as being likely to take place about the beginning of the fall.

In the interests of the paper industry as a whole, it is devoutly to be hoped that the Riordon concern will shortly be placed on a basis that will afford a genuine guarantee of stability. Elsewhere in this issue something is said about the creditors' meeting at Montreal yesterday, and as to the plans which, it is believed, were submitted thereto. The proposals, on which such plans are based are understood to look to the raising of no less a sum than $10,000,000, of which—according to the strong and persistent rumor— the directors are ready to subscribe $1,000,000, while two Canadian companiesh interested are understood to have promised $1,500,000. At the meeting in question, the present creditors' committee was re-appointed to act for a further three months, and the Company was granted an extension of time for that period, such extension, however, being made subject to cancellation by the committee.

The strike of the Toronto printers still shows no signs of any likelihood of ending. Indeed there seems no prospect of either side giving way, or reaching a compromise, over the matters in dispute, the most important of which is the question of the forty-four hour week. On the other hand, the employers are going ahead with the work they have in hand and in improving their plans for the future operation of their plants under conditions more to their liking than those to which the strikers will agree. On the other hand, the strikers utterly scout the idea that they may soon be forced to give up the struggle by reason of lack of funds. New heart, if they needed it, was probably put into them by the speech made, the other day, in the Toronto Labor Temple by Mr. John McParland, the President of the International Typographical Union, who was passing through the city and stopped off to address the striking printers and their wives. Mr. McParland told them that "the International Typographical Union can carry on the fight for the forty-four hour week indefinitely." He said that of the 40,000 members of the Union, employed in the commercial printing branch, 31,000 were now enjoying a forty-four hour week, and 8,000 men in the United States and Canada were now on strike for the same principle. On the subject of the Union's financial ability to continue the payment of strike pay to this big total of men, he said that the total contributions to the defence fund amounted to $1,000,000 per month, while the disbursements to striking members totalled only $800,000 a month. Thus a large surplus, at the rate of $200,000 a month was being piled up, be added, and the Union was consequently able to carry on the struggle as long as the employers wished to hold out. So there the matter stands a very pretty example of an irresistible force meeting and immovable body!

PULPWOOD.—The demand for pulpwood continues light, many mills having large quantities on hand. Nor is there much anxiety displayed to add to these stocks at present, as there is an expectation that a reduction in freight rates a matter which enters largely into the question of pulpwood prices—may shortly result in price reduction.

NEWSPRINT.—The price of newsprint is a subject which continues to evoke a good deal of interest and speculation—particularly in publishing circles. That the price will be about $80 a ton for the last quarter of the current year seems to be the general idea now in such circles. But it may be that, here, the wish is father to the thought. Several mills—notably those of Laurentide and Abitibi—are reported to be very busy. Speaking of the Laurentide, by the way, there is considerable interest felt in the new world's record hung up by its No. 9 machine, built by the Dominion Engineering Works, Ltd., of Montreal, which turns out newsprint at the rate of 1,000 feet a minute regularly.

WRAPPING PAPERS. — There has lately been a notable improvement in the business in wrapping paper, particularly in kraft. The writer was told today by the representative of one of the largest mills that it was anticipated that this month's business would prove to be better than that transacted in any previous month of this year. Having regard to the fact that August is usually a dull month for the paper trade generally, such a statement as this for such a quarter must be regarded as satisfactory in the present, and distinctly encouraging for future prospects.

COATED PAPERS.—During the past days there has been a decided expansion of demand for coated papers and also for writing papers and envelopes. Orders, too, that are coming along are somewhat larger in size.

BOX BOARD.—There is an improvement in the demand for boxboard, and some mills report that quite a nice business is being done.

TOILETS AND TISSUES.—The trade in tissues has not shared largely in the prevailing depression of recent times, and the business in tissues is fairly good and improving. That in toilets is also improving.

NEW YORK MARKETS.

New York, August 20—(Special Correspondence).—One of the important developments in the paper industry this week was the announcement of the decision of the board of arbitration appointed last month to adjudicate the differences between the management and union employees of newsprint paper mills in the United States and Canada who went on strike last May. The new rates represent a 10 per cent reduction for skilled workers and a 25 per cent reduction for unskilled men, as reported in the Pulp and Paper agazine last week.

Just what effect it is likely to have on the paper market is at the moment problematical other than it is expected to lead to a more stabilized condition, as labor costs will now be put back to a level equivalent to those prevailing in 1919. No announcement has been made by newsprint manufacturers in this country regarding the price they will charge contract customers over the final quarter of the year.

There is little of note stirring in the newsprint market. Shipments on contract continue to move along regularly, but spot demand is slow, though, when everything is said, not so light for this season of the year. Publishers are unquestionably eating into their surplus stocks of newsprint and the time is coming when they will be obliged to look around the market for increased supplies. Statistics show that consumption of print paper has fallen off but a trifle thus far this year in comparison with 1920, and the fact that production is considerably under that of last year, owing to the strike and other causes, means that in due time surplus holdings of newsprint will have disappeared. Prices are gradually getting down to levels, moreover, where consumers should not hesitate to buy for forward requirements as well as to cover immediate needs. Newsprint at 4 cents per pound, which may be the market basis for the final quarter, is not so far in excess of pre-war levels. Publishers can hardly expect to see a return of 2.25-cent newsprint, not if mills are to realize a profit. Even before the war most manufacturers were literally starving for marketing paper at such a price, and it must be remembered labor, raw materials and all other production costs are today easily a hundred per cent above pre-war, and are likely to continue to be.

Tissue papers are in very good demand. Not alone are coarse tissues moving freely, but fine tissue is steadily improving in demand, and mills producing these grades of paper are constantly increasing operations. Reports say that a single order for six carloads of No. 1 white tissue was placed with a Middle West mill a few days ago, which even in the busiest of times is a big order for tissue. Quotations are firm at around $1 per ream for No. 1 white, 20 x 30, and for No. 1 manila, 24 x 36.

Book papers remain in a generally unchanged condition. Reports have been heard of some mills making sales of machine finished book at 5.75 cents a pound f.o.b. New York, but this is declared to be under the market, around 5.25 cents being the price commonly quoted, with some mills situated a good distance away naming 6.50 cents, and even 6.75 cents, f.o.b. this city.

Fine papers are quite through no further important changes in prices are noted. There is an easy tone to quotations, and mills are granting concessions rather than let the available business escape them, but no one is slashing prices with a hope of stimulating demand. The leading writing paper manufacturing organization in New England is said to be operating its plants about 50 per cent of capacity, and other mills are probably not doing any better on an average.

Boards present a little firmer tone. Boxmakers continue to buy cautiously yet demand if anything is picking up. The season is fast approaching when the paper box business broadens, and board manufacturers and dealers are expectant for an increased demand for boards in the near future. Most of the current buying is being done at around $28 per ton f.o.b. New York for plain chip and $30 for news board.

GROUND WOOD.—Quotations on mechanical wood pulp are steady to firm and most of the reports received tell of a fairly good business passing. Consumers are purchasing in a careful manner and are mostly limiting orders to tonnage actually required, but on the whole ground wood is moving freely, and the tendency of prices is unmistakably upward. Low water has forced more grinding mills to close down, it is said, and this situation has a strengthening influence on the market, while the general willingness of producers not to market pulp unless securing full prices also is a sustaining factor. About $30 per ton f.o.b. grinding plants is an average of quoted prices on domestic spruce ground wood, freshly ground. Some sales down to $28 have been reported; on the other hand, some manufacturers are said to be firmly holding for $32. Scandinavian ground wood is offered in this market at around $28 a ton ex the dock, but most of the supply offered is for shipment from the other side and therefore not immediately available.

CHEMICAL PULP—Trade in imported chemical wood pulp appears to be on the rise, despite which prices continue on the downtrend, with sales recorded at new low levels. Domestic pulps are mostly ignored by buyers at present for the reason that foreign pulp is available at so much cheaper figures, and it is extremely difficult to get an accurate line on domestic pulp values.

According to reports, some lots of Scandinavian and German bleached sulphite of No. 1 quality have been sold to American paper mills at 3.75 cents a pound landed here, yet there have also been sales noted at 4 cents indicating that all importers have not reduced prices to the low level or else that the bleached sulphite coming in from Europe differs considerably in quality. Scandinavian kraft pulp has sold down to 2.10 cents per pound ex the dock, with offerings at between 2.15 and 2.25 cents fairly numerous. Foreign unbleached sulphite of No. 1 grade is quoted at 2.50 to 2.75 cents. Importations at New York, Baltimore and other Atlantic ports during the past several weeks have increased substantially, thus confirming reports that American paper mills are buying quite extensively abroad.

RAGS.—While most descriptions of paper making material appear to be becoming livelier, rags prove to be one of the foremost exceptions. There is very little business in rags. Roofing felt mills are absorbing a few small lots in a spasmodic way, blotting paper mills are buying naw and them, and some writing paper manufacturers are placing an occasional order, but the aggregate movement of supplies is unusually light and altogether insufficient to create any firmness in values. Such buyers as are operating in the market are invariably obtaining the rags wanted at price concessions and conditions are such that only actual buyers can determine at just how low purchases can be made.

PAPER STOCK—Insofar as regards the situation in New York, waste papers are in a distinctly firmer position and prices are perceptibly strengthening, sales having been reported this week placing values on higher levels in a number of cases. The scarcity of most grades is quite pronounced, owing to the refusal of collectors to gather paper at present market prices and also owing to the small production of printing houses, and it appears that it is this factor that is making for the firmness rather than any voluminous buying by consumers.

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No. 1 soft white shavings are now quoted at 2.25 cents per pound f.o.b. New York, or very close to that figure, while about the minimum dealers will accept for heavy magazines is 85 cents a hundred pounds, for No. 1 hard white shavings, 2.65 cents; for white blank news cuttings, 1.50 cents; for old No. 1 kraft, 1.60 cents; for folded newspapers, 37½ cents a hundred, and for No. 1 old mixed papers, 25 cents. Even at these prices dealers are cautious sellers, being mostly unwilling to contract with mills for sizeable tonnage.

OLD ROPE AND BAGGING. Old rope is firm in price at around 4 cents per pound, and mixed strings are bringing between 60 and 70 cents a hundred pounds at shipping points in sales to consumers. Old bagging is dull and nominally priced at about 75 cents per hundred for No. 1 scrap bagging, one cent a pound for gunny bagging and 50 cents a hundred for roofing bagging.

STEAM ACCESSORIES SUCCESSFUL.

The Beveridge Supply Co., Ltd., Montreal, have advised the Pulp and Paper Magazine of the success they are having with Damper Regulators and Vulcan Soot Cleaners and have sent specimen catalogs which they will send anyone on request. An interesting letter from a Canadian mill is included, comparing favorably the efficiency of this cleaner with another prominent make. The Beveridge Supply Co. now handle a complete line of boiler room supplies.

HELPFUL CATALOGS.

The Canadian Fairbanks Morse Co., Montreal, representing W. H. Allen, Sons & Co. Ltd., Bedford, England, are distributing a circular describing the "Allen" Engines and Pumps. Manufactured in England, and used extensively by the British Admiralty and Mercantile Marine, as well as in the industrial plants, they are well known in all parts of the world. One of the illustrations is a picture of pumps for the Dryden Pulp and Paper Co.

The following is a list of the booklets on different subjects which Canadian Fairbanks Morse will be glad to send on request:

Oil Engine Driven Pumps;
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Steam Engine Driven Fans;
Steam Turbine Driven Fans;
Steam Turbine Driven Pumps;
Steam Engine Driven Pumps;
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Steam Engine Driven Generators;
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General Machinery;
High Efficiency Condensing Machinery;
Surface Condensing Machinery;
High-Efficiency Surface Condensing Machinery;
High-Efficiency Surface Condensing Plants;
Description and Illustrations of Condensing Machinery;
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Unless your letter weighs one ounce, you are wasting some part of the postage you pay on it. Most business letters weigh less than half an ounce, so envelope stuffers cost nothing to mail.—Adams' Impressions.

A man who can bottle up his temper is a corker.

COST OF BISHOP FALLS FIRE.

The damages aused by the fire at the Read Pulp mill at Bishop's Falls are estimated to be about one hundred and twtnty thousand dollars. The fire is said to have been caused by a spark from the mill chimney. The cutting up room and the slasher room were totally destroyed, the wood room partially burnt out and some roof work damaged. It will take some weeks before pulp operations will be resumed.

WANTED.—Ground Wood Superintendent desires position. Experience in constructing and maintaining. Capable of organizing and handling men; able to take full charge. Reliable. Best references. Box 435.

WANTED -Position as cook in Sulphite Mill by man with good practical experience as such. Also in Acid Making. Apply Box 31, Merritton, Ontario.

WATER POWER AND MILL SITE.—Southern Nova Scotia. On tidewater. Admirably suited for ground pulp mill. Unlimited supply of wood on watershed. Practically inexhaustible supply of pulp for five grinder mill. Ample power. Has been declared by competent authority as best remaining site where both power and materials are at hand. For particulars address Box 438, Pulp & Paper Magazine, Gardenvale, Que.

Scandinavian American Trading Co.

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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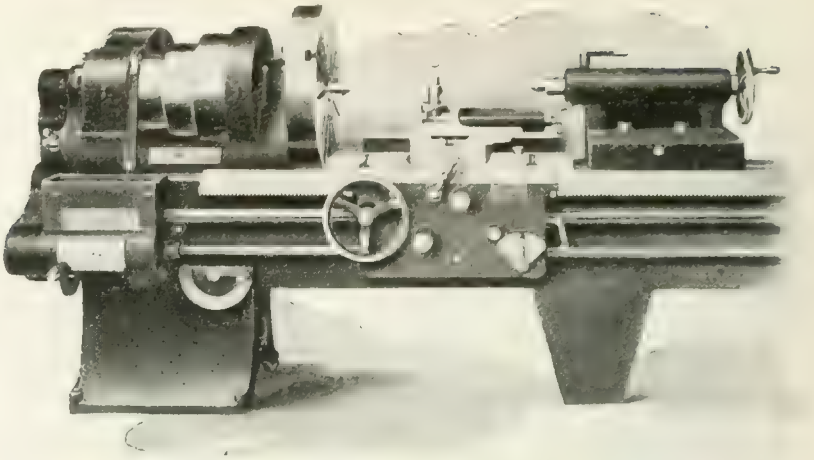

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EDITORIAL

SHIPPING PULP BY WATER.

An interesting possible development in the transportation of pulp from Canadian mills is suggested by the satisfactory results recently obtained by the Bathurst Company Ltd., in shipping pulp by vessel to an American port, in and near which are several paper mills. The advantage of shipping in this manner is evident when the cost of $4.00 per long ton for delivery to Philadelphia by water is compared with the charge of $14.00 by rail. Our information does not specify whether payment in American funds enters into the matter but in any case the advantage appears to be very largely with the water route.

Many people apparently fail to realize the very great transportation advantages which could be made use of by the fortunate geographical situation of most Canadian pulp and paper mills. By far the greatest part of pulp and paper in Canada is produced within 50 miles of a port or waterway that will permit the loading of ocean going vessels. There is probably no country in the world which produces as much pulp and paper under such conditions. It is also probable that no country has availed itself less of the advantages of available water routes. The action of the Bathurst Company, largely forced upon them by the large discrepancy between freight charges by rail and by water, will cause other concerns to consider the possibilities of following their example.

There was a time when by far the largest part of freight shipments, and most passenger traffic as well, went by water. The introduction of the railway brought in a more prompt dispatch in most cases and enabled the railroad to compete successfully with the steam boat. Recently however, there has been an increase in rail transportation costs rather out of proportion to increases by water. The advantages of speed and in some cases perhaps also ease of packing and loading into cars may partially or perhaps entirely overcome the handicap of expense and there are of course, inland points that can be reached only by rail. In some instances however, it may be possible to combine water shipment and railway transportation to obtain more economical delivery of goods. The likelihood is that water shipments will remain largely a matter of handling pulp because of the need for more expensive packing of paper to meet the requirements of the methods of handling paper aboard ship. There has been a very great increase in the world's available shipping since the war began and there has been a general decrease in railroad equipment although there is more than enough for the present diminished amount of business because of the general depressed condition of affairs. This excessive shipping seems to have had a greater effect on shipping rates than has been the case with railroad accommodation and it seems like a good field of investigation for Canadian producers as a means of getting their goods on the market at a lower rate by shipping directly by water or by shipping to a convenient port and dispatch thence by water to destination.

A further tendency which may develope because of the discrepancy of rates noted is that we may see more and more industrial development at points convenient to ocean shipment.

MEN REQUIRE LEADERSHIP.

The history of the world is a composite biography of leaders. The successful leaders and the ones whose names live as benefactors of the race, are the ones who have not only had a great personal stake in the outcome, but who have looked on their work as a means of wider service. Leaders are required in industry as surely as in politics, war and religion. The present unrest in industry is largely due to a desire to discover whether our leaders shall be men elected because of their popularity and self-assertion, or men who have grown into positions of responsibility by virtue of their ability, application and sacrifice. The former have little or no stake in the industry they seek to control. They know comparatively little about it from actual personal work, in fact in many cases they are not, and have never been, industrial workers. On the other hand, successful leaders of industry, organisers of business, have themselves filled minor positions and have proved their ability by application to their job and by studying the factors which affect the business. They have invested themselves in their work and have not only the maximum personal stake in their business but have a keen sense of responsibility both to the public and to the various members of their organization whom they endeavour at all times to keep occupied and paid.

A successful enterprise is however, but half accomplished when a qualified leader is found. The other half of the success depends upon the loyalty and hearty co-operation of the members of the organization. It is necessary that all work for the success of the whole, it is necessary to realize that the success of the individual depends upon the success of the whole enterprise. The Russian people failed to realize this and the collapse of the Bolshevik dream is doubtless due quite as much to the failure of the people to get behind and co-operate with the leaders as upon the lack of ability and the misguided policy adopted by Lenin and Trotsky. Communistic attempts to operate industrial concerns by elected committees have invariably failed.

Industry is much safer in the hands of experienced leaders than under the direction of the most popular and smooth spoken of egotistic wouldbes. This truth is borne out by the experience of more than one mutinous crew who, having deposed the skipper, found themselves entirely unable to navigate the vessel. The safety of our industries and with it the possibility of continuous employment for those engaged therein, depends on hearty co-operation with the qualified leaders who have learned how to navigate the seas of commerce and is quite impossible of attaining by anything in the nature of mutiny.

It must be kept constantly in mind by those who would seize the ship, that the present captains in almost every case can be said to have "shipped before the mast" and that their success can be duplicated in open competition by the same methods that have brought it about and continually at the same time improved working conditions for the employee, namely application, education and loyalty.

COBWEBS.

The questionnaire may be looked on as a bugbear or as a form of service boomerang. The member of an association who fails to fill out and return promptly a questionnaire sent him by the secretary is spiting himself. He is deliberately decreasing the efficiency of his organization and the benefits he will receive. Results tabulated from answers to questionnaires are reliable only when they are complete. That means pay attention to them. We refer particularly to the letter just sent out by the Secretary of the Cost Association. This association can be of inestimable benefit to the industry if given proper support. You can't sell intelligently nor compete successfully if you don't know your costs. The association helps you work accurately.

It is very interesting to read the names of officers recently elected to the *International* Union of electrotypers. Every office mentioned was filled by the election of an American and the annual meeting took place in a Canadian city! There is a growing movement toward the organization of Canadian workmen in Canadian organizations. Is it any wonder?

During the term of office of the last Governor General when one spoke of something "the Duke" had done, there was no question as to the person referred to. Since the advent of General Byng, however, it will be a bit ambiguous to refer to "the Lord."

We do not wish to appear unduly critical of our contemporary, the Paper Mill, and we should not be accused of boasting in remarking that the *exclusive* story on the front page of their issue for August 20th was substantially the same as the account published several months ago in the Pulp and Paper Magazine.

The appearance of the Canadian Forestry Magazine is well worthy of mention. The last number appears in a new size which coincides with that adopted by most technical magazines. The editorial matter and press work are maintained at the highest standard.

Average wages in ten industries showed that the German receives $5.99, the Frenchman $9.91 and the American $29.13 per week. Figures are not just at hand for the same industries in Canada but general comparisons indicate very nearly equal wages on both sides of the line. We have here a clear indication of what may be expected with regard to successful competition with Europe. Our only chance is cheaper raw material, cheaper power, smaller profits, greater efficiency, and, made possible by all this, wages lower in proportion.

WHEN TO STOP ADVERTISING.

The head of a large organization declared the other day that he had decided to stop advertising because the amount of business derived directly from it was not satisfactory. He received this reply: "Are the orders coming in from your salesmen satisfactory at present?" He admitted that they emphatically were not. "Are you going to lay off all your salesmen?" he was asked. "Certainly not," he replied indignantly. "We've got to have our men out to keep in touch with the trade". Yet he had decided to stop the very thing which keeps his company and its product in touch with the trade and the public in a far more comprehensive way than his salesmen can possibly do. It is just possible that he will now change his mind.

The time to stop advertising is not when orders become extremely difficult to land and when plants sorely need business to keep them going. If an ambitious advertising program can increase the percentage of production even moderately, it thereby reduces the overhead per unit of production. Moreover, it reduces the number of employes that have to be laid off, and this ought to be a consideration of the first moment in times like these.

Don't sit back. Sit up. Don't give up. Go to it.—Forbes' Magazine.

WHAT CANADA BUYS.

Referring to Canada's large and growing exports, especially of manufactures, as an "extremely creditable showing for a comparatively sparsely settled country covering half a continent and with a population of only 8,370,000 scattered over its 3,730,000 square miles," The National City Bank, N. Y., continues:

"Geographical and climatic conditions will always make Canada an active market for many products which the country itself cannot produce, or cannot produce in sufficient quantities to meet the requirements of the home market. The following summary of the principal imports into Canada for the same period as the exports named above shows that the following purchases were made by Canadians from abroad: iron and steel, $193,000,000; cotton, $127,000,000; sugar and molasses, $95,000,000; wool, $89,000,000; anthracite coal, $33,000,000; bituminous coal, $43,000,000; silk, $42,000,000; vehicles, $35,000,000; breadstuffs, $29,000,000; chemicals, $26,000,000; hides and skins, $22,000,000; rubber, $21,000,000; flax, hemp and jute, $19,000,000; tobacco, $16,000,000; leather, $16,000,000, and tea, $11,000,000.

The Renaissance of Straw Pulp and Paper

By MARTIN L. GRIFFIN, Technologist, North Dighton, Mass., for many years chemist of the Oxford Paper Company.

This article, which is reprinted from the Paper Mill, should be very encouraging to those who have the vision to foresee the possibilities in the vast amount of straw annually destroyed in Canada. It forms a suitable preface to a comprehensive orticle on the structure of straws, which will begin next week.

In the search for relief in the present shortage of paper and the increasing scarcity of raw materials, we may profitably review briefly the history of straw pulp and paper.

The manufacture of paper pulp from cereal straws dates back to very early times. It was perhaps the raw stock from which paper was first made. If this is true it follows that straw naturally suggests itself as a suitable paper making material.

The history of any process begins with the simplest forms and gradually develops into the more intricate and complex, and the products resulting are more valuable and beautiful. This is strikingly true in the development of paper manufacture. The making of paper then was a very simple art at first and the product crude.

Modern processes have become very complex and chemistry has entered very largely into making of paper from wood, where originally mechanical force only came into play. Of the two great agents, mechanical and chemical force, beating and dissolving, the former is chief. Paper can be made from any fibrous materials by beating in water, but not by purely chemical action. The real essence of paper making, therefore, resolves itself into a very simple operation which can be performed, and was originally, by simple manual labor. In the progress of the process, mechanical power and then chemical, came to be substituted until we have come to believe that paper can only be made by very large investments of money and other resources. So it came about that huge concentrated quantities of natural resources have been sought to feed the modern giant machines, with all the social problems entrained which now confront society.

Within the bounds of one generation we have stripped our forests of harvestable timber, till there is a cry for paper, and lumber for houses to live in which cannot be satisfied. We are about to repeat this experience in the wanton use of another natural resource which cannot be replaced. The giddy rate at which petroleum and its products are being exhausted is at its height now. Other instances might be cited.

What is the remedy? The remedy must involve the habits and customs of the people. Individuality and the fruit of individual labor have been absorbed in the great organization wheel in which mass action and conformity dominate.

Raw materials and labor are sorted and graded in large quantities to fit the machine. Small issues, no matter how important as such, are turned into the discard and personal responsibility is at a discount. There is little connection between the fruits of labor and what is called "wealth" today. Our civilization is threatened with social and industrial problems which will tax our best brains to solve.

How well then, we shall live in the future, depends much upon how hard and skilfully, how honestly and faithfully we are willing to work. If half the lumber consumed in making paper during the last ten years had gone into the building of houses for the people, we should not now be forced to live in restricted quarters and cry out against profiteering landlords. Extravagant quantities of wood from the forests converted into paper and given over to yellow journalism and costly advertising, flit about in the busy life of the time, like moths around a candle, and in a day is lost forever, and who has benefited? It is like a joyride, nothing but artificial exhilaration at the time, and weariness afterward. This lumber used in building homes for contented people would endure for 100 years.

Of late popular interest in the use of straw for paper is reviving and I know of no source of raw materials which can help tide over the shortage better than the cereal straws. There are no experimental risks involved. Before the day of wood pulp, straw was the principal source of our cheap papers and small mills using straw were numerous in New York, Ohio, Indiana and Illinois. For many years the industry has led a struggling existence and many mills have taken up other lines or fallen in ruins. At one time straw paper was of such importance that it formed an important division of the American Paper and Pulp Association and I well remember the reports at the annual meetings which Mr. Van de Carr made from year to year, as wood pulp gradually displaced it and absorbed the market.

Of all the waste fibrous stalks which have been exploited for paper, the cereal straws are the most valuable, abundant and best known, and are the only ones, so far, which have been used with commercial success. Next to wood they are the most universally distributed. They are quick growing and the period of harvest is long, depending upon the latitude and the time of sowing. On this account they have a great advantage over other crop stalks, like sugar cane, corn and cotton, even if they were well adapted to paper making.

Two kinds of pulp have been made from straw. The first and most common is straw wrapping, made by digesting or steeping straw in milk of lime until it is well softened. It is then washed, beaten and run over the machine. This process is capable of several refinements both in the cooking and beating which will give it a better market.

Milk of lime is a weak alkali and does not act vigorously enough to dissolve much of the incrusting matter and the paper is therefore hard and woody. If stronger alkali is used in the cooking, the pulp will be cleaner and a better paper can be made from it, but the yield will be less. The proportion of soda ash or caustic soda may be increased until it becomes what is known as the soda process, chiefly used in cooking woods of certain species. Such pulp is called chemical pulp and is bleached and used in writings and high grade book, and possesses some qualities superior to chemical wood pulps.

The yield from straw is from 75 per cent down to 40 per cent depending upon the cleanliness of the resulting fiber.

The process of making straw wrapping is simple and does not require a large investment in plant nor much labor. Small plants can be erected anywhere near a fuel supply and a small stream of water. Enough straw can be produced within a short distance of the mill to keep it running all the year around.

By reviving the industry, the way will be opened up which will lead to a greater expansion naturally. Straw wrapping paper should now begin to regain its lost prestige and replace wood pulp in such papers, and conserve the wood for those uses where at present straw pulp cannot be used.

I believe the time is at hand when attention should be directed to straw as a source of chemical pulp for book papers. Poplar wood for the soda process is becoming very scarce and other substitutes are being sought. The manufacture of straw cellulose in European countries was carried on extensively before the era of wood pulp. The process is essentially the soda pulp process adapted to straw and very much like the manufacture of pulp from esparto grass in England and Scotland. So thoroughly has this industry established itself that esparto pulp and papers have never been displaced by wood pulp, notwithstanding the fact that all the grass must be imported from Spain and Africa and the ultimate yield is only about 40 per cent. On account of transportation costs and the hitherto abundant supply of wood, esparto has never been used in the United States. If straw was now as abundant in the region where paper is made as it is in the great agricultural States of the West, I believe it would have come into more general use. The time will come, if it is not already at hand, when the use of straw for paper will become a large and valuable industry in the Northwest. All that is now needed is the vision of a few far sighted men, who know something of the manufacture of paper themselves, or possess the ability to get them.

It is surprising that our government laboratories have not realized the value of the cereal straws for paper making, but have devoted most of their energies to the further exploitation of other species of wood and to waste stalks which give little promise of success.

There are two characteristic features of straw which have to be carefully taken account of, in the conversion to chemical pulp, the knots or joints and the silicious matter. The knots being much harder and more impervious than other parts of the stalk, require more severe treatment to reduce. They must be eliminated, either in the cooking, or by screening afterward.

The presence of considerable silica in straw is a source of some annoyance in the soda process. It dissolves in the cooking liquid forming sodium silicate, from which the soda cannot be recovered. It also forms a troublesome scale on the tubes of the evaporators in the recovery process. The difficulties do not preclude a successful operation of the process but they must be reckoned with.

I do not know that the less commonly known sulphate process has ever been tried out in the reduction of straw, but inasmuch as it is not calculated to produce a high grade of pulp, it would not be advisable to attempt it.

If straw is ever to be used extensively in making news print, I believe the sulphite process must form the basis for doing it. The characteristics of pulp for news are, strength enough to make safe running on the machine and press, and to stand the reader's handling, short flakey pulp, like ground wood for filling, requiring very little beating and of a fair white color. Such stocks now compose news print paper and the news mills are set for them. Two processes are required to produce them; the sulphite, making the strong pulp, and the grinder, the short pulp. In straw we have the components of both pulps, both of which can be made available by the sulphite process in one product. It has been known for a long time that the fumes of sulphur will whiten straw and it has been a common practice in other trades.

In the nature of the case, therefore, the sulphite process is adapted to the treatment of straw for news print paper. Slight references to the use of this process on straw are to be found in the literature of the subject, but no interest in it has been developed.

In 1908, during the pulp and paper hearings before a Congressional committee, Nathan Cobb, an expert technologist in the Department of Agriculture referred to the possibilities of this process as applied to straw, and stated that experiments ought to be made, but none has ever been made that I know of.

In the treatment of straw, what is wanted, is first a mechanical treatment which will cut it up and disintegrate it, including the knots, and convert it into a short broken fiber chaff. Second, a digestion under pressure with a cooking, scouring, bleaching liquor. This is a perfectly simple and easy thing to do, but nobody has thought it out. Since the days of Alexander Mitscherlich, whom I believe was the greatest sulphite expert the industry has ever produced, everybody who pretended to know anything about the business has been reducing the alkaline base and increasing the "free acid." He used an acid containing 2.5 per cent base. The common practice now is less than one per cent. He obtained maximum yield and strength. We sacrifice both of these for production.

I make this reference to show that the sulphite industry has adapted the extreme acid side for cooking liquor at the expense of yield and strength. If we are to produce straw sulphite, a more alkaline liquor should be used. It is an easy matter to make a cooking liquor with two distinct functions.

I have indicated how easily and with what little investment small mills can be built and operated in the regions where straw is, to make cheap wrapping paper and plants to make sulphite straw need not be large or complicated or require huge investments to be made successful. The conversion of the pulp into paper will require an up-to-date paper mill, but there is a place for the small mill well located today.

I have, on many occasions, affirmed that wood has no substitute for news print paper comparable with it, and that everything possible should be done to conserve and restore our resources of the forest, but I maintain that we must not quit and make no effort to bridge the gap.

I have criticized the press and politicians for trying to make capital out of many substitutes for paper pulp which we all know are nothing but dreams, but if they will create a general interest in developing an industry in straw paper they may count on my hearty support.

Employee. I don't like your methods of doing business, Mr. Grafton. I resign.

"Practical" Business Man (sneeringly). — You're a holier-than-thou guy, eh?

Employee. No; merely a square peg in a crooked hole. — Puck.

Salesmanship

By B. SPROULE, Toronto.

A great deal has been said and written about selling. Personal appearance, manner of address, and methods used to obtain the buyers interest in your proposition, these things that go to make up personality are just the trimmings. If a man has not honesty of purpose, thoroughness and a sincere desire to give real service he can not expect to accomplish anything really permanent.

It pays to give considerable attention to personal appearance as a good appearance will often open doors that can only be opened with great difficulty by a careless man. I had a practical demonstration of the value of good appearance some time ago; I happened to be in the building which houses the Standard Lithographing Co. and while there I thought I would call and see Harry Reeder. I asked if he was in and the clerk asked who would he say wanted to see him, and I said "Mr. Sproule". When I got into the holy of holies he was standing up all ready to receive me, and when he saw who it was he nearly laughed his head off. I said, "Say Harry, what is the joke?" He said, "When the man brought your name in, I never thought about you and I asked him what kind of a looking man was he", and the clerk said, "Not bad but a very prosperous looking person." Personality is a great help. A pleasing manner, a good address and good appearance all make selling easier.

A salesman's approach greatly determines his success or failure. Many a man throttles his chance of success by being too perceivably filled with his own importance, and after he has finished his introductory speech of all he knows (which as a rule takes a long time, but could be given in one breath) he would leave the impression that there is little else worth knowing.

Self conceit is not self respect. Every paper box salesman should have his full measure of the latter, for he sells a line required more today than ever, but he should be careful not to conflict such respect with an antagonizing conceit. Most men admire a respectful salesman, who, yielding due deference to the buyer, carries with him a strong conviction of the worth of his line and the belief that he can serve.

Selling is service, not unloading the manufacturer's product upon the buyer, and not by any means a price competition to determine the transaction. Many manufacturers are almost entirely to blame for the evil of price cutting, when at the same time they are most anxious to overcome it. They do either of two things:

1. Put their salesman on commission or

2. Determine his worth to them by the total of his sales.

The result is often the passing of much more of the manufacturer's product to the buyer than is immediately necessary, and a great scarcity of the personal service between the salesman and customer. In the end a lack of confidence is inspired. It seems natural to conclude that the freer a saleman is to serve the customer with his time, advice, co-operation, suggestions and experience, the more confidence would he engender and the more able to sell regardless of price. The salesman should not be encouraged to sell goods at any price. Which is the more valuable, the man who makes a large total of sales at a low margin of profit or the salesman who works to win the confidence of his customer and sells his service along with the manufacturer's product at a margin of profit unquestioned, because of such confidence?

In our plant we expect to do about $30,000 of business this year that we have created by designing boxes for our customer, which enabled him to create and get business he might not have got otherwise. If salesmen would only look at the proper angle and convince the customer that they are not selling boxes but the contents of the box, that by designing a box and making it so attractive that it will sell the article, the sale of the box automatically takes place, for the greater the sale of goods the greater the sale of boxes.

For instance, the salesman is calling on a man who is going to put out a new article, now the salesman should get all the information he can about the history of similar packages, their success or failure, the particular advantage this shape would give, also the attractive color scheme that would enrich the appearance of the package, the particular color that would give the package an individuality, also the advantage of adopting a trade mark.

A trade mark or trade color has great advantages. For it is a well known fact that in South America the natives buy goods by the pictures, for example, they will call for Indian Head Hatchets, Star Brand Soap, Eagle Brand Shovels, etc.; and also the effect it has on children's minds, who can remember the pictures before they can read the words.

Salesmanship has been spoken of as an art. If it is one of the lost arts for it is not known in the paper box industry. For at the prices that boxes are sold today there is no salesmanship used. During the period of prosperity we have just passed through, salesmanship got lost in the shuffle and the production man was the big noise, and the man who took the order or allowed the order to be placed with his firm was called a salesman, but to my mind the species has become extinct. Why are we selling goods at the ridiculous prices that they are being sold at today? Is it the fault of the salesman or is it the fault of the boss? I think the fault is the boss's in a great number of cases. For in his over-anxiety to get new business, he gives the salesman prices that are not fair to the salesman, because it creates in the mind of the buyer the thought that all he has to do is to say that he has got lower prices and the salesman wants another chance to revise his figures, which destroys his initiative and creates paper box salesmen of such a low standard of salesmanship that they will be of a class equal to the handy men of the mechanical trades, developed by specialized war production, that are such a glut on the labor market today, who are neither mechanics or laborers, and who cannot fit into the general scheme of things as they are at present, and are unable to earn a decent living.

Here is an example of salesmanship that occurred just recently in Toronto, a so-called salesman called on a user of paper boxes and was informed that the buyer had just gotten a supply of boxes sufficient for some time, from a house whose service is good, boxes acceptable, and the price never questioned, on account of the confidence built up by the salesman, who was serving

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[*] Address delivered at the annual meeting of the Canadian Paper Box Makers' Association, Hamilton, Ont., June 23, 1921.

him. He requested the privilege of quoting and being assured of their present satisfaction in their boxes and the plentitude of stock on hand still persists in quoting. He gives the quotation, safe in the knowledge that boxes are not required immediately, but quotes with the purpose of getting a place in the sun, a figure of $12.00 M. the firm supplying the boxes at legitimate price of $24.00 M. Now what is the result of this quotation? The buyer in this case knew that the price was ridiculous, that he would not be able to deliver the goods at the prices stated, and immediately decided that the salesman was no good and that the house he represented was not reliable, and a good house not to do business with, and this particular firm will never be able to even give a quotation to the house in question, in the future. We can all realize the great amount of harm that the industry suffers from cases of this kind of salesmanship.

The trouble in the paper box industry today is too much selling of prices and too little selling of service at a profit. This is the time that the paper box industry should be placed beyond the period of price selling and should encourage its men to be salesmen that will be good profitable trade builders to the house they represent. Real salesmen that can earn real salaries and be valuable assets that the salesmen should be to the institution they represent.

OPERATIONS BEING RESUMED IN HIGH GRADE MILLS.

Resumption of operations by some of the high grade paper mills on a broad scale is reported to the American Paper and Pulp Association, these reports coming from various sections of the country. Several large producers in New England are steadily increasing their output now that the low point has been reached.

Following the recent and various individual downward revisions in the price of high grade paper, liquidation is apparently complete in the Writing, Book and Cover paper markets and as a result buying is increasing.

While these prices may not have returned to their pre-war level, they are down to bed rock so far as costs are concerned. With contract bleached sulphite selling at 4¼c and other pulps down in relative values, with rags only 3 per cent higher than 1913 prices, with wages reduced to the lowest possible minimum and with coal still high, the mills are faced with fixed costs for a number of months and have gone the limit in the reduction of their prices. Furthermore, these prices contemplate increased production, because at the present low rate of operation they represent in many lines a distinct loss.

In comparison with costs, high grade papers have liquidated more in their prices than shoes, finished cotton goods and textiles, the factories of which are in operation with good demand since the public feels these prices to be on a satisfactory level. High grade papers, having gone to, and below, this level, are now also increasing in use with the return of confidence on the part of the merchants, printers and public.

The little savings bank in the home means more for the future of the children of a family than all the advice in the world. It gives them the right start.—William McKinley.

We should remember that we can earn most with two good eyes, two good hands and two good feet.

PAPER BARRELS TO BE MANUFACTURED

At the Montreal Rotary Club last week, Mr. Art. Harries, president and manager of the Canada Paper Box Company, gave an interesting talk on the uses which paper has come to be put to in the manufacture of boxes and containers for packing and shipping goods, with a word of explanation as to the process of manufacture.

He mentioned that the manufacture of the solid fibre container was primarily introduced by his firm in 1914 and that since then three or four other factories had engaged in such manufacture, and that, in normal times, there was room for even more. This container which can be packed away in sheets in comparatively limited storage, he said, had taken the place of wooden boxes to a very large extent, and had proven its serviceability for shipments abroad, with transfers from rail to ship and vice versa, largely on account of ability to resist damage from water.

Mr. Harries exhibited samples of the paper from which the containers are made and explained the machine processes. In this connection he intimated that his firm is about to embark in a new departure in the manufacture of paper barrels, in which they would be the pioneers so far as Canada is concerned, although the paper barrel is not altogether new in England and the United States. Mr. Harries also showed samples of the barrel they proposed to make, suitable for the shipment of flour, lime, dyes, sugar, butter, lard and other goods. As a demonstration of the resiliency of these barrels he challenged any 200-pound Rotarian in the room to stand on the bilge of one—the barrel being without the support of its heads—an invitation which was accepted by a member who scales something over that mark. The barrel showed no signs of yielding whatever. Now what would have happened, Mr. Harries asked, if the same member had stood on the bilge of an ordinary flour barrell with the heads out of it? Mr. Harries said his firm was now preparing to instal the necessary plant for manufacturing these goods.

CANADIAN INTERESTS NEGLECTED.

A recent article on the pulp and paper trade and other matters by Mr. Edward Beck, leaves it to be clearly understood that there has been a serious neglect of Canadian trade interests in government negotiations, or rather perhaps in the absence of desirable government negotiations with Australia. "British paper-makers," said Mr. Beck, "expect to benefit by pending tariff legislation which undertakes to give protection to certain so-called 'key-industries' in Great Britain, among which paper-making is classed. They have also recently been granted a substantial tariff preference by Australia, and are out to recapture that market which was largely supplied by Canada during the war. It would be interesting to know how Canada came to be excluded from this preferential arrangement, since it was only a few months ago that the Australia Trade Commissioner to the United States, Mr. Mark Sheldon, in a trade conference in Toronto, declared that Australia would be perfectly willing to extend such a preference to Canada if Canada would give reciprocal concessions."

The Canadian paper business is not by any means at the present time in such a condition of surpassing prosperity that it can afford unnecessary and unjustifiable neglect on the part of those whose duty it is to have a due regard for the trade interests of the country.—Quebec Telegraph.

The New Sulphite Mill at Cornwall

One of the first mills to make sulphite pulp in Canada was that of the Toronto Paper Co. in Cornwall, whose president, the late John R. Barber, made a trip to the Kellner mill and having satisfied himself as to the value of the new fibre, contracted for the necessary plant for its manufacture. The principal article required was a digester, in which the spruce wood is cooked along with sulphurous liquor, which removes the resin and converts the wood chips into pulp, subsequently bleached and otherwise treated till it is finished as a clean white sheet.

Floated Digesters up the River.

The first digesters were made at Duisberg-on-the-Rhine, Germany, and were brought to Montreal on a steamship. The question of conveying these huge monsters to Cornwall was a problem, as there was no means of loading them on a railway car, if one could have been procured equal to such a load. This was solved by plugging up the manholes and dumping the digesters into the St. Lawrence, where they floated nicely and were towed to Cornwall. The hauling of the big boilers up the canal bank from the tail-race of the paper mill was another big job, but was accomplished at last by the ingenuity of Big Mike Keenan.

The digesters were got into place, together with other machinery for barking the spruce logs, sawing and splitting them and turning them into chips. It took a good while and a good deal of money and experimenting to turn out good pulp, but is was at last accomplished, and numerous improvements were made in the Kellner process. This was in 1888, and the old pulp mill has been working continuously ever since till the present time.

A New Big Mill.

When the Toronto Paper Co. was merged in the Howard Smith Paper Mills, one of the first moves of the latter concern was to prepare plans for the erection of a new sulphite mill on a large scale, with a capacity several times as great as the original mill. The main building of the new structure is 30 x 80 feet and 110 feet high, and contains four digesters, with a capacity of 70 tons of bleached pulp per day. One of these digesters was built by the Dominion Bridge Co., and was completed by them at their works at Lachine; the other three, on account of their larger size, were shipped in sections from Manitowoc, Wis., and riveted together where they now stand. The process of chipping the wood is improved and simplified, the logs coming in a continuous stream, and automatically dropping into the chipper. From the chipper the shredded fragments are conveyed to a sorter, the larger pieces being separated to be further reduced in size, the smaller passing through revolving sieves, which take out the dirt and sawdust. Elevators convey the chips to the digesters, where they are boiled with sulphurous liquor, and the mass is then blown into the drainers, thence being conveyed to the wet press, which forms the material into sheets. It then goes to an hydraulic press, and when a large proportion of the moisture is removed and the pulp is then ready for shipment or for use in the local mill. The sulphurous liquor is made by burning sulphur in a revolving burner, the gas passing into two high towers, filled with limestone and water, and from thence goes into the digesters. The Jenssen process is employed. A separate building is provided for this purpose. The old pulp mill is being fitted up for the Bellmer bleaching process, and will be completed shortly. It is intended that all the mills controlled by the Howard Smith Paper Mills shall use sulphite pulp from the Cornwall mill. A new mill is also almost completed for the manufacture of chlorine gas for bleaching, by the electrolytic process, which will also supply the various Howard Smith plants.

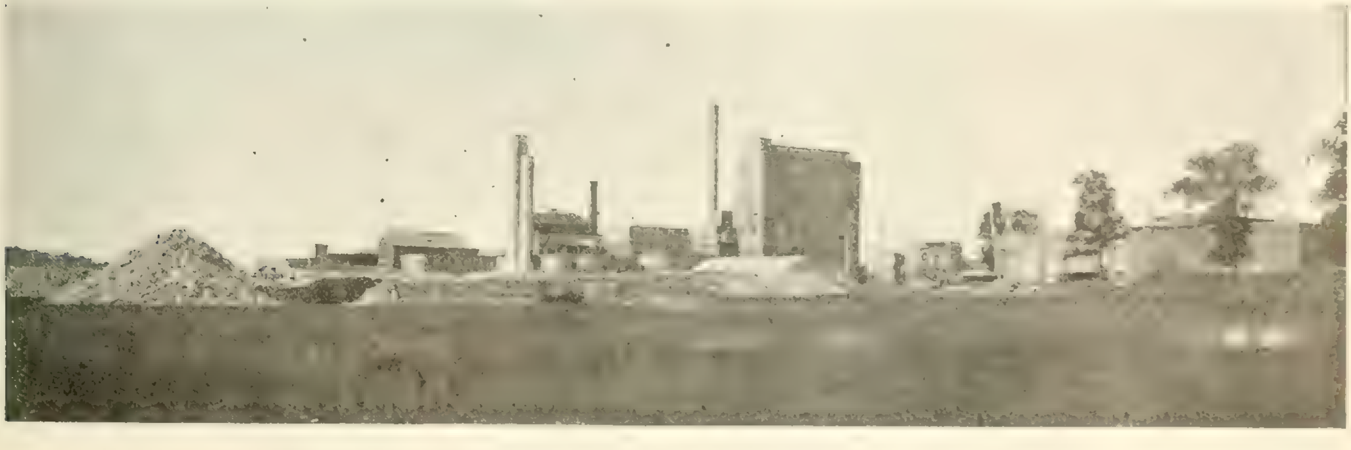
Interesting Features.

A very interesting feature of the new plant is a filter, through which all the water used in the manufacture of paper, and that is a lot, passes before being used in the various processes. It is a concrete building, in which are a number of vats, partially filled with gravel and sea sand. Water percolates through the filtering material and falls into a clear-water compartment. The process is continuous and automatic.

A new steam boiler house has been erected, with a stack 200 feet high, and a conspicuous feature of the landscape, with a complete equipment of boilers, all fitted up with the latest devices for the saving of labor, and economizing expense in every way.

For the moving of the heavy machinery and materials, the company has a locomotive crane of 15 tons capacity, which has rendered much easier the construction of the buildings and their contents, and will be of great service in subsequent operations.

The immense piles of pulp wood which occupy a large area give one a good idea of the magnitude of the operations of the new plant. These piles aggregate about



General view of the Cornwall Division, Howard Smith Paper Mills, Ltd.

20,000 cords, and are diminished at the rate of about 140 cords a day, representing the product of 10 or 12 acres of forest.

The Cornwall Paper Mills.

The first mill of the Toronto Paper Co. was built and went into operation in 1883, with one machine, still in active use. Four machines are now running, with an aggregate of 40 to 45 tons of paper a day. One machine is being rebuilt for the making of bristol board of high quality. The output of the mills includes writing papers, manillas and the finer grades of books and lithographic papers.

The original mill was erected under the supervision of the late James D. Finlay, one of a family of paper makers, who continued as manager for a number of years. There have been several managers since, and Wesley N. Tilton, a graduate of the mill from boyhood, and whose reputation stands high amoung the papermakers of this continent, is now in charge.

The first business manager was the late James Young, who was succeeded by W. J. Wallace, who still holds the same position, and is excelled by few in his knowledge of a highly technical business.

The enlargement and improvement of the entire plant has been conducted under the personal direction of Gerald M. Smith, M.E., and the completeness of the entire outfit, which is one of the best and most extensive in Canada, is the best testimony to his ability in that direction.

The Howard Smith Paper Mills Ltd. controls mills at Cornwall and Crabtree, Que., whose output includes almost everything in the way of paper of the better grades—the aggregate product being 120 tons daily.

The Cornwall mill has had a career of uninterrupted success, having always lived up to a high standard of production; it employs a large staff of well-paid workmen, has suffered very slightly from labor troubles, and is one of the sheet anchors of Cornwall's prosperity, contributing greatly to its reputation as the Factory Town.

The working force of the mill in Cornwall numbers about 400 men and women.

The officers of the Howard Smith Paper Mills, Limited, are as follows:—President, C. Howard Smith; vice-presidents, James W. Pyke and J. Alex. Cameron; secretary, Harold Crabtree; treasurer. E. Howard Smith; directors, D. W. Campbell, W. D. Robb, J. J. M. Pangman, Howard Murray; comptroller, T. P. Howard; local manager, W. J. Wallace.

BOOTH MILL SHUTS DOWN.

Ottawa, Aug. 28.—About 150 men were temporarily thrown out of work over the week-end, following the suspension of operations at the big paper mill of the J. R. Booth Company at Chaudiere. Business depression and a consequent lack of orders was given by J. Fred Booth, manager of the concern, as the reason for a brief shutdown. He expected that work would be resumed about the 1st of September.

Fifty men of the E. B. Eddy Company, who have been idle since Wednesday last, will be back at work tomorrow when that company's paper mill will recommence operations after a five days' shutdown.

SWEDISH DISCOUNT NOW SIX PER CENT.

It is stated that the Swedish Riksbank has reduced the discount rate to six per cent. The previous rate was six and one-half per cent.

MORE LIGHT ON LABRADOR.

Some light is thrown by the Sidney, N.S. Record on the rumor that 600,000 cords of pulp wood are to be exported to Holland. Referring to the exploration trip of H. C. Bellew and party to Labrador, to which reference was made editorially recently in the Pulp and Paper Magazine, the Record says:

"The party left Louisburg on July 14th and their purpose was to investigate and make a survey of a timber limit 148 miles square at Stag Bay for which they had already paid $20,000 deposit. The tract is situated on the Atlantic side of Labrador 350 miles north of the Strait of Belle Isle. The property is owned by P. G. McGrath, of St. John's, Nfld.

Mr. Edwards, speaking of the tract of land, says that there is no timber there worth mentioning. Even if the timber was there, he says, it would be of no use, for there is no water to float it on.

We paid $20,000 down on the land, Mr. Edwards continued, and were told that we would find the best of pulpwood timber, but we found nothing but scrub spruce. It is too cold there for anything else to grow. This scrub is absolutely useless for pulpwood.

Mr. Bellew will continue to look for a timber tract as he has an order from a frim in Holland, which he has to fill at once. This order, he says, is for 60,000 cords of pulp wood a year for the next 10 years, and another order from a United States firm is for 40,000 cords and a third for 10,000 cords. He will look into some timber tracts in New Brunswick next week. I would rather locate in this part of the country anyway, he said, and if I can obtain limits I will do so. He expects to employ between 1,000 and 1,500 men when work is started.

Mr. Bellew claims that the party lost about $30,000 on the Labrador deal. He has wirelessed the prime minister of Newfoundland that he will employ 1,000 men if he can obtain a timber limit in that colony. Speaking of this, he says that he has little hope of getting anything in Newfoundland as the British firms have all of the timber limits under their control.

WOOD CARGO AT OSWEGO.

With a cargo of 950 cords of pulpwood from the Gaspe Peninsula, the steamer Aragon arrival at Os-
Gaspe Peninsula, the steamer Aragon arrived at Os-
Canada a few days ago. The Aragon has been on the west coast trade for the past ten years and this is her first appearance in that time back on the Great Lakes.

The Meigs Pulpwood Company, which owns the pulpwood terminal at Oswego, has about 16,000 cords of wood cut, peeled and docked ready for shipment in the Gaspe country, but little more of it will be shipped unless business conditions in the paper industry improve.

B. F. Perkins & Son, Inc., Holyoke, Mass., manufacturers of the Mullen Paper Tester, Jumbo Mullen Tester, and Perkin's Mullen tester, have secured the services of Mr. Thomas Holgate as travelling representative. The firm feels itself fortunate in obtaining Mr. Holgate's services, believing that his experience resulting from his connection with varied industries will enable them to extend the best services to their customers.

If the boss pasted a ten-dollar bill on the bulletin board, would you stop and look at it? He pastes a good many hundreds of dollars there every year in the shape of Safety bulletins. Do you read them?

CONFIDENTIALLY—NOW'S YOUR CHANCE.

(Some Excellent Advice from the United States Paper Maker.)

The general acceptance of the well-known quotation concerning the direction of the young man's thoughts in the spring time makes it unnecessary to argue the question. Let it be conceded that in the spring the young man's fancy lightly turns to thoughts of love, even when, if perchance, he is in the paper business, he should be devoting himself to thoughts of selling a few tons of super, especially if his loving thoughts have got along as far as matrimony.

But at the spring passes and the summer gets into its swing, with the thermometer climbing daily, and pep departing in exact proportion, the fancy of most men, young and old alike, turns to thoughts of loafing in some particularly agreeable manner. Some prefer golf, which is one of the highly popular forms of getting a little light exercise combined with pleasure, while others yearn to fish but all find it more or less difficult to keep the old bean concentrated on labor, and this being so, efforts in that direction become exceedingly mild.

And an observer among paper men just now will find this tendency just about as strong as it ever was, or even a little more so, due to prevailing conditions. Although the efforts of some executives have been directed for some time toward impressing their sales forces with the powerful importance of hard work, the perspiration which is unavoidably connected with work during the dog days does not strike the average salesman as worth while; and the midsummer slump, therefore, which has all of the advantage of a first-class start accumulated through the spring, bids fair in many cases to receive important help from weary and indifferent sales work.

All right—if you feel that you might as well lay off and take it easy until buyers make up their minds to resume their proper function of purchasing large lots of paper, go ahead. If you take the view that there is no use in pushing for business when business has retired into a deep, dark hole, refrain from pushing. save in connection with some light and summery amusement. If you believe that there is going to be absolutely nothing doing, whatever, before fall, and that there will be plenty of business for everybody then, you probably wouldn't get much, anyhow, and you might as well get whateever benefit there is—and there's a lot, too—in a complete vacation.

But don't forget this, in the meanwhile, as you cavort on the beach or the fairway, or match wits with the wily bass: There are a few chaps in the trade who are putting in some of the hardest licks of their careers right now, and who are going to continue to do so everyday right along instead of waiting for a revival. Of course, they'll get their vacations, either between whiles, or later on. They'll week-end with ease and enthusiasm, too, and they'll manage to get in an occasional afternoon at a ball game or elsewhere. But in the meantime—oh, boy!

"Confidentially, I'm going to work my head off during the next few months," confided one of these lads not long ago.

He is representative in a good-sized territory of a good line of paper, and has had his share of the big business, so that it isn't as if he had to sweat during the summer to keep from starving to death. But he looks at things from a rather broad angle, and—queer duck— actually seems to like his chosen job of supplying the world with paper.

"You know how it is during the worst of the summer," he continued. "Lots of buyers are away, although not all of them leave at once, at that, as so many fellows seems to think they do. The vacation season is on, and I've met lads who seemed to think that that meant everybody should take it easy, whether apparently on the job or not. The weather is pretty mean, too, lots of the time, and it's a lot easier to piffle around, pretending to work, than it is really to work.

"So, everything considered, the usual summer let-up is no astonishing thing. It's just about as logical a things as you can find anywhere. It would be surprising, in fact, if no slump occurred, because effort slumps, and interest slumps, and I don't see, myself, why buying shouldn't. And when you consider how things have been lately, it looks like this summer will pretty nearly set a record in the matter of dullness, with most people. It is the safest bet I know of.

"And that is one of the several reasons why I'm going to put in some stiff licks myself. It's got to be done, in order to keep any sort of volume of stuff moving, and I aim to keep it moving, let me tell you. It isn't as if we were going to be shut down, with nothing to sell. I know that you hear now and then the suggestion that it might not be a bad idea to do just that. Regardless of that, however, the fact remains that we're going to keep running, and that means that I've got to sell paper.

"But here's my idea: It's going to be easier to sell paper this summer than it has been for several months past, and there is going to be less competition, as far as I can see—provided the usual summer let-up in effort and interest comes—than usual. How's that for a size-up of the situation? I don't mind giving you my dope, either, for what it is worth, and you can wait and see how nearly right I am.

"Stocks everywhere are low; in fact, you could say that there aren't any stocks, compared with a normal situation, and not be very far wrong. Consumers who usually have on hand a lot of the various papers which they need haven't any. They are buying in small lots instead, getting immediately delivery, and getting along that way. By the same token, the average dealer is doing exactly that same thing. I've known cases lately where dealers who usually have carloads of a given grade on hand had simply passed on to a mill an order for a few reams. That shows you where stocks are, doesn't it? There ain't none, so to speak.

"All right; you can't argue with that fact, simply because it is a fact. Take the next thing, which is the reasonable expectation of a fairly good fall business in various lines. Everybody may be wrong in looking for it, but considering the limited supplies of goods of all sorts, the small volume of business which has been handled practically ever since the first of the year, and the ordinary necessities of the country, I don't see how we can fail to get something of a livening up during—and in advance of—the fall. And that, of course, means paper.

"That makes a fairly simple situation, it strikes me —a complete absence of supplies in the hands of buyers, and a practical certainty that in the very near future those buyers are going to begin, cautiously, to replenish their exhausted stocks. Now, with a lot of the boys whom Icompete with, and from whom I get competition, practically laying off for the rest of the summer, I figure that a fair-to-middling pace on my part will look like lightning. Anyhow, I'm going after business, and if I don't bring in the orders you can feed me crow, that's all."

After this base betrayal of the confidence of a good paper man there is no harm in adding the suggestion that a revival of buying will, in all probability, catch the average salesman far, far from base. He may find himself tagged out before he knows where the ball is; whereas, of he keeps careful tab on the situation, keeps close to his customers, and to conditions in the manufacturing end of the game, and, above all, on general business, he can take his two weeks or so with a clear conscience, and with the knowledge that things are in good shape in his territory.

The significant basic facts are certainly as indicated above. Stockrooms and warehouses are practically bare of paper, and there are plenty of wise buyers and company heads in consuming lines who are planning a gradual but steady campaign of replenishment, with the idea of getting on hand at least a part of the paper needed for normal use, and averaging its cost, whether the market goes up or down. In any event, they will have paper.

And the salesman who in the sweltering dog days —they are not all so bad, at that—has the grit to keep plugging, and the sense to put his customers right as to their paper requirements, is going to get considerably more than his share of the business which is exactly as it should be.

ABITIBI CIRCULAR ON PHYSICAL CONDITIONS.

An interesting circular on Abitibi Power and Paper Company has been prepared by R. O. Sweezy, B.Sc., M.E.I.C., and issued by the Stock Exchange firm of O'Brien and Williams. Mr. Sweezy personally visited the properties and mill of the company. The circular says, in part:—

Built in 1913 and 1914 the Abitibi plant at Iroquois Falls had a rated capacity of 225 tons a day of newsprint paper. The enlargement now about completed, gives the plant a daily production of 500 tons newsprint paper, and a surplus of ground-wood and sulphite pulp sufficient for an additional 100 tons of newsprint paper.

It will probably be a few months before the daily production of the whole seven machines exceeds 450 tons, but it is probable that in due course the same machines can be tuned up and improved to produce 600 tons of newsprint a day, besides the 25 tons of wrapper to be produced on an eighth machine.

A further increase beyond this of $100 tons daily is possible in the groundwood plant by the addition of grinders which can be operated from surplus power available.

Until completion of the new power development some 20,000 h.p. has been supplied from the Iroquois Falls under a head of 42 feet. The new power just developed under a head of 57 ft. at Twin Falls—four miles distant above the mill—will supply 25,000 h.p. besides improving the regulation and output of the Iroquois Falls power. The two power plants combined can now deliver a minimum of 47,000 h.p. and space is provided at the Twin Falls power house for an additional unit of 6,000 h.p. The Lake Abitibi storage reservoir of 400 square miles, 9 feet deep, is controlled by the Twin Falls power dam. Further storage of some 40 square miles, 18 feet deep, is available for development at low cost.

With the proper tuning up of the three new machines (Nos. 5, 6 and 7) during the next few months the effect of the new extension will have been to increase the newsprint production by 2½ times—a feature that may soften the adverse effect of the splitting of the company's shares on a basis of 5 to 1. Thus in relation to production this ratio becomes 5 to 2½ or 2 to 1. The increased production should also have the effect of decreasing the cost per ton of paper.

The company owns 1,500 square miles of forest in the Abitibi watershed. The stumpage rate is 40 cents a cord of 115 cubic feet of solid wood payable as and when cut. This is $1.00 a cord less than stumpage dues in Quebec Province—an advantage that means nearly $250,000 a year on the Abitibi Company cut. In view of the greatly increased production, negotiations are now in progress where the company expects an additional grant of 2,500 square miles of forest. The total of 4,000 square miles will give them about 13,000,000 cords of pulpwood, which, together with wood available from the Quebec side of the Abitibi basin, places the company in a secure position for all time.

At a time when pulp wood was costing $20 to $30 at most Canadian mills, the Abitibi Company could obtain its wood for $12 to $16 a cord at mill. As it takes a cord and a half of wood for a ton of paper it is obvious how such a difference in cost can affect earnings.

Some advantage will be found in the fact that pulpwood supplies which have been carried in abnormally large quantities during the uncertain period of rising prices can now be greatly reduced in relation to output, whilst this item will be further eased by much lower wood cost. That is, the amount of working capital required per ton of product will be very much reduced by reason of falling prices.

CHINA AWAKENING TO FOREST VALUE.

Forestation in China made noteworthy progress in 1920 through the activities chiefly of the provincial governments.

More than 130,000,000 shoots were planted and cultivated by twenty-one afforestation institutions in central and north China at a cost of $250,000 in Chinese currency.

The government railway, anticipating their need of timber, have also taken steps to plant trees along their rights of way. One alone, the Kansu-Haichow Railway, is in process of planting 4,000,000 trees, according to the bureau of economic information.

Afforestation has been extended to nearly all the provinces, with especially promising stations in Shantung and Kiangsu. In the latter province, at Nanking, there are approximately 6,000 acres devoted to the cultivation of 25,000,000 trees. In this station students are given a three years' course in forestation and later are sent to various districts to specialize.

There are three gardens in Shantung which occupy some 700 acres. The largest and most prosperous station is in the north of Kiangsu, near Yengchow, where 3,000 to 4,000 trees are grown every year.

Special afforestation schools have been established in Anhwei, Chekiang, Hupeh, Szechaun and Shansi. It is estimated that 25 per cent of the 1,800 hsiens or counties in China are now engaged in this work, which the Chinese hope will in due course transform many of their barren tracts into flourishing forests.

The establishment of a national arbor day, when all classes of the population are encouraged to plant trees, is pointed to by the bureau as an indication of China's awakening to the value of forestation.—Fourth Estate.

British Trade News

(From our London Correspondent.)

London, 16th August 1921.—The safeguarding of Key Industries Bill has become an Act of Parliament, despite all the opposition put up against it, and a small deputation representing the papermakers was received on behalf of the Imperial Government to urge on the necessity of protecting paper manufacturing interests. The passage of the Bill through the House of Commons was painfully prolonged and it will be up to the Board of Trade to decide on the question of paper being a key industry. Speaking at Glasgow to a meeting of 500 business men, Mr. E. J. Donaldson, one of the few paper men opposing the Bill, said that for five years of the war and two of peace we had been cuddled, sequestered, controlled, and bureaucratted until we could not call our souls our own. British industry, he added, had been built up by British initiative, enterprise and genius in competitions with the whole world and the sooner we got back to those conditions the better. Quite so! But all the papermakers ask is protection against countries with depreciated currencies who are not competing reasonably.

Magic in Cardboard.

Every week in London cardboard is being introduced in some new device. There is as a consequence a growing demand for cardboard which should not be lost sight of in Canada. This week the new device is the office desk luncheon — in a magic luncheon cardboard box. Supposing you are in London doing business all you have to do is to send out of your office for a half-dollar luncheon box containing 3 courses, fish, meat with vegetables, and dessert. Each articles of food is made up in cardboard containers, even to the salt, and there is a serviette made of rice paper, a knife and fork carved out of bamboo and a drinking vessel produced from papier-mache. Considering the thousands in London alone who will create a demand for these boxes of food it may be safely assumed that the demand on cardboard rice paper and papier mache will be enormous as time passes and I understand the railway companies are also encouraging their use. Lyons, the big London caterers, who pay 40 odd per cent. dividend every year, have started the boxes which are made for them on contract.

July Exports of Paper.

The temporary closing of the markets in India and the other Dominions is reflected in the exports of British paper for July. Shipments of all kinds, including cardboard, playing cards, etc., reached 94,616 cwts as against 211,628 cwts in July 1920, the total for seven months January-July being 847,223 cwts. compared with 1,180,308 cwts. for the corresponding period in 1920. Of course, the coal strike had also a good deal to do with a reduction in the exports, but the fact remains that the demand for British paper abroad is at present at the lowest ebb and a quick turning of the industrial tide is necessary to improve the unsatisfactory position prevailing.

Printing paper was exported to the following countries: — To France, 376 cwts. (12,923 cwts. in July 1920); U. S. A., 1,047 cwts. (515 cwts.); other foreign countries, 7,412 cwts (30,366 cwts.); South Africa, 6,624 cwts. (8,218 cwts.); India 6,226 cwts. (25,636 cwts.), Straits Settlements, 331 cwts. (947 cwts.), Ceylon, 453 cwts (1,306 cwts.), Australia, 13,423 cwts (5,640 cwts.); New Zealand, 6,540 cwts (3,237 cwts); Canada, 25 cwts. (27 cwts.); Other Possessions, 2,898 cwts. (6,733 cwts) —making a total of 45,584 cwts. compared with 95,548 cwts. for July 1920. The seven months exports of printings reached 446,549 cwts. compared with 469,761 cwts. for the corresponding months in 1920.

Writing paper was exported in July to the extent of 10,567 cwts, as against 20,543 cwts. in July 1920, the seven months total reaching 78,756 cwts. as against 115,233 cwts. in 1920. The countries exported to were as follows: to France, 28 cwts. (3,103 cwts. in July 1920); U. S. A., 142 cwts. (55 cwts); Other Foreign countries, 1,756 cwts. (3,805 cwts); South Africa, 256 cwts. (725 cwts.); India, 4,470 cwts. (5,318 cwts); Straits Settlements, 124 cwts. (437 cwts.); Ceylon, 30 cwts. (457 cwts); Australia, 2,014 cwts (2,954 cwts.); New Zealand, 1,238 cwts. (1,569) cwts); Canada 41 cwts. (93 cwts); Other Possessions 468 cwts (2,027 cwts). A great falling-off is noticeable in the shipments to India, Canada, and France. The seven months supply of writing paper to Canada is larger than in 1920 the figures being 713 cwts. as against 169 cwts.

Wood Pulp Imports.

The supplies of wood pulp received in the United Kingdom during July show a material drop — only 55,971 tons arriving compared with 115,804 tons in 1920 and or the seven months, January-July 234,563 tons as against 621,029 tons in 1920.

The supplies were as follows: Bleached chemical dry 1,735 tons (1,660 tons in July 1920); Unbleached Chemical (Dry) 19,219 tons (48,155 tons); Chemical wet 156 tons (3,154 tons); Groundwood (Dry) nil (3,488 tons); Groundwood (moist) 34,861 tons, (59,347 tons).

Groundwood (wet) was imported in July as follows: From Canada, 22,314 tons (15,725 tons in July 1920); Sweden 1,000 tons, (20,695 tons); Norway, 11,234 tons (21,794 tons); Other countries, 313 tons (1,133 tons). Total for seven months 146,083 tons (as against 277,212 tons in 192). Total of Groundwood (dry) for seven months 1,227 tons as against 19,882 tons in 1920.

Bleached Chemical (Dry)—From Finland, nil; Sweden 585 tons (669 tons in July 1920); Norway 1,145 tons (810 tons); Germany nil (15 tons); Other countries 5 tons (166 tons) Total for 7 months 7,768 tons as against 18,334 tons in 1920.

Unbleached Chemical (Dry)—From Finland 50 tons (none in July 1920); Sweden, 13,607 tons (27,801 tons); Norway 2,743 tons (8,275 tons); Germany nil (2,613 tons); Canada and other countries, 2,819 tons (3,060 tons). Total for seven months 78,415 tons as against 300,914 tons.

The total value of all supplies of pulp is only £5,681,092 for the seven months as against £15,703,857 in 1920.

Imports of Paper.

The total supplies of paper, cardboard, strawboard, etc., in July reached 522,724 cwts. compared with 1,424,768 cwts in July 1920. The seven months figures are 3,249,20 cwts as against 8,377,922 cwts. in 1920.

Printing paper was imported in July as follows: From Sweden 62,574 cwts (38,538 cwts. in July 1920); Norway 31,808 cwts. (67,803 cwts); Germany, 45 cwts (17,288 cwts); Belgium, 4,136 cwts (4,072 cwts); U. S. A. 250 cwts. (8,778 cwts); Canada, 10 cwts (23,310 cwts); Newfoundland 80,240 cwts. (164,780 cwts); Other countries 49,114 cwts. (99,526 cwts).

Packing and Wrapping Papers: From Finland, 7,152 cwts (48,518 cwts.); Sweden 55,826 cwts (164,863 cwts); Norway, 36,587 cwts (88,325 cwts); Germany, 3,336 cwts (31,102 cwts); Belgium 6,027 cwts (9,030 cwts); Canada, 180 cwts (5,426 cwts); Other countries 13,733 cwts (28,723 cwts).

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Madagascar Wood and Plants Suitable for Papermaking C. C. GROUD, **Papier**, xxvi (April 1921). Brief description of the woods and grasses growing in Madagascar, with special reference to their utilization for the manufacture of paper pulp. A. P. C.

A-3. Suitability of Mulberry and Certain Malvaceae for the Preparation of Paper Pulp. J. ST. CLAIR. **Papier**, xxiv (April, 1921).—Japanese mulberry can yield 5 per cent of high grade fibers and 30 to 35 percent of fibers of indifferent quality, but its use for this purpose is not worth consideration. Textile tow from "*Da*" (*Hibiscus cannabinus*) contains 55 to 60 percent of cellulosic, fibers suitable for papermaking, and the stalk can yield 36 to 38 percent of paper pulp of lower quality. Hand sheets made from "*Da*" pulp are very white, slightly glossy, soft to the touch, and rather porous. The tensile, tearing, and folding strengths are very satisfactory. The stalks of *altea rosea*, harvested after blossoming, yield 12 to 15 percent of a creamy white, supple, brilliant, and long-fibered pulp which can be used as a filler. A. P. C.

A-3. Bourdie Grass.—World's Paper Trade Review, lxxv, 18.—Experimental trials with a raw material known as bourdie grass growing in Egypt and carried on at the Imperial Institute showed a pulp of moderate quality only but suitable for the production of brown wrapping paper or cardboard. It has not been found possible so far to bleach the pulp satisfactorily, and it seems unlikely that the pulp could be used for the production of white paper.—A. C.

A-0 Industrial Preparation and Filtration of Colloidal Masses.—J. H. Frydlender, **Rev. Prod. Chim.**, xxiv, 173-82 (March 31, 1921).—Description of Plauson and Block's "colloid mill" and of its application to many industries, including the purification of resins for papermaking and other uses, and the preparation of plastics, artificial silk, cellulose esters, etc. A special mill has been devised by Plauson and Block and is being marketed by Emil Passburg of Berlin, Germany, for the preparation of matter in a colloidal state. In it the material is ground in the presence of water or other suitable liquid, in such proportions as to have a fluid mass. The grinding element must have a peripheral speed of not less than 2,000 meters a minute, and preferably of about 1,000 meters a second. (Cf. A new large scale commercial method of preparing colloidal dispersions and its future prospects for the chemical industry. Hermann Plauson. *Chem. Ztg.*, xliv, 553-5, 565-7 (1920); *Chem. Abs.*, xiv, 3129 (Oct. 20, 1920). It is claimed that the application of the method to the preparation of colloidal resins yields a very finely divided and high grade product at a low cost, and it is necessary to use only about 1 to 2 percent of solvent. Cellulose or cellulosic materials when passed through the "colloid mill" are transformed into colloidal gels or sols, which may be used for the manufacture of plastics, of artificial silk, or of cellulose esters, or which may be saccharified. The main characteristics of Plauson's ultrafilter are that it works under very high pressure, which may reach 200 atmospheres (about 3,000 lb. per sq. in.), and that its operation is continuous. The filtering surface is supported by means of a perforated metal cylinder which is surrounded by a series of metal gauzes of rather fine mesh. The effective mesh can be varied by suitably adjusting the pressure on the gauzes. As this is not yet sufficiently fine for filtering slimes or colloidal solutions, the pores must first be obstructed by means of a water suspension of the material to be filtered, or of asbestos, plaster, etc. inside the cylindrical space in which the mass to be filtered is introduced, there is a rotating helical screw scraper of such diameter that the thickness of the deposit on the filter may be maintained constant at any desired thickness. The deposit becomes heavier as it descends through the apparatus and may be discharged at the desired consistence. The liquid passes through the filtering medium (composed of the wire gauzes and the deposits) at a constant speed, since the thickness of the deposit, which constitutes the greatest obstacle to its passage, is also constant. The filter may also be constructed by winding several layers of wire around a perforated cylinder. The liquid is forced to flow around a perforated cylinder. The liquid is forced to flow around the interstices between the wires, and these soon become clogged with the material to be filtered, which then acts as a filtering medium. By using a wire covered with cotton, asbestos, cellulose, or paper, exceptionally active filters are obtained. The filters can also be impregnated with rubber, cellulose esters, etc. The filter can be put to numerous industrial uses.—A. P. C.

A-0. Volumetric Determination of Aluminum. ALFRED TINGLE, **J. Ind. & Eng. Chem.**, xiii, 420-2 (May, 1921). In valuing aluminum sulphate for use in papermaking, the ordinary gravimetric estimation of "total alumina" is useless, since "combined alumina," i.e., alumina which goes to the formation of neutral $Al_2(SO_4)_3$, is alone of importance in sizing while the salt as sold commonly contains 1 percent or more of uncombined alumina, which dissolves in the aluminum sulphate solution but takes no part in the reactions involved. Several volumetric methods for the determination of "combined alumina," all of which turn on the titration of the aluminum salt with an alkali, using phenolphthalein as indicator, are compared. The details of manipulation to be observed in carrying out this principle are all-important and constitute the differences between the methods. Of the methods examined, only two were found to be both convenient and trustworthy: Method A: The aluminum sulphate solution is boiled, phenolphthalein solution added, and the still boiling solution titrated with sodium hydroxide solution (not stronger than half normal). The end-point is reached when the pink color persists after boiling for 1 min. (For details consult original. Scott, **J. Ind. & Eng. Chem.** vii, 1059 (1915).) Method B: The solution of aluminum sulphate should contain approximately 10 Gm. of the salt per liter. To 100 Cc. while boiling, add 5 Cc. of saturated barium chloride, drop by drop, followed by 4 or 5 drops f 0.1 percent phenolphthalein solution. While still almost boiling the solution is titrated with standard sodium hydroxide of convenient strength. The mixed precipitates settle rapidly and the end-point is very delicately shown by the pink color of the supernatant liquid, best viewed horizontally. If the maximum accuracy is not demanded, a very slight excess of alkali may be used, produsing a coloration which can easily be seen without waiting the short time necessary for the precipitate to settle. Method B has some slight advantage over A, especially in the presence of iron. It is quite essential to use an alkali of titer not more than half normal. A.P.-C.

C-8 Measuring Moisture Content of Chips.—F. M. WILLIAMS, **Paper**, xxviii, 7 (April 20, 1921); **Paper Trade Journal**, lxxii, 16; **Paper Mill** xliv, 16.—Brief discussion of the importance of testing chips for moisture, and of the merits of the Williams standard pulp testing outfit for this purpose.—A. P. C.

E-2. Waste Sulphite Liquor for Tanning.—WALTHER BRUCKHAUS, **Chem. Techn. Ind.**, 1920, 3, 1; **Chem. Zentr.**, 1920, xi, 11, 469; **Rev. Prod. Chim.**, xxiv, 225 (April 30, 1921).—Waste sulphite liquor possesses no tanning power. The iron, lime and sulphurous acid which it contains exert a noxious action on tanning materials. Purified liquors, however, may be useful in tanning, as they favor the penetration of the tanning materials into the leather.—A. P. C.

E-5. Shortening Cooking Time of Sulphite Pulp by Preliminary Impregnation.—Vance P. Edwardes, **Paper**, xxviii, 7; **Paper Trade Journal**, lxxii, 16; **Paper Mill**, xliv. 16. **Pulp and Paper xix, 36.**—Detailed description of experiments carried out on a semi-commercial scale. The tests showed that woods can be pulped successfully in appreciably shorter time and at lower temperatures by the use of preliminary impregnation. When using this modified method of pulping it is necessary to change the acid composition to take care of the increased speed of the chemical reaction. The purpose of the lime in sulphite acid is to remove from the sphere of action the decomposition products formed by the reaction of the sulphite acid and the lignin complexes. Evidently, when these complexes are formed more rapidly than usual it is necessary to have higher concentrations of lime in the solution. Increased yields, decreased screenings, and stronger pulp also accompany the use of higher combined. It remains for a mill scale trial to prove the feasibility of the idea.—A. P. C.

G-9; K-12. Theory of Atmospheric Evaporation. W. H. CARRIER, **J. Ind. & Eng. Chem.**, xii, 432-8 (May, 1921). A mathematical development of the subject, proving the following points: The rate of evaporation at any instant per unit of surface is proportional to the difference in vapor pressure between the liquid and th vapor of that liquid in the immediate vicinity. Other conditions beng constant, the rate of evaporaton increases in direct proportion to the velocity. (Cf. W. H. Carrier, **Proc. Am. Soc. Heat. Vent. Eng.**, xxiv (1918); Thomas Box, **A Treatise on Heat**, 1870). The rate of evaporation is substantially proportional to the wet bulb depression, when the material is not heated, and 95° depression is approximately equivalent to 1 in. difference in vapor pressure in the evaporation formula. The drop in temperature of the air in the drier is proportional to the rise in vapor pressure of the air. The weight of evaporation is substantially the same at any temperature per degree depression. The capacity of air for producing evaporation is directly proportional to its wet bulb depression. For a given exposed surface and air quantity, the ratio of the final depression to the initial depression is constant regardless of changes in dry bulb temperature or moisture content of the air.—A.P.-C.

G-9; K-12. Rate of Drying Solid Material. W. K. LEWIS, **J. Ind. & Eng. Chem.**, xiii, 427-32 (May, 1921). A discussion of the fundamental factors affecting the drying rate, with the derivation of drying formulas, their applications to special cases, and also their general significance. It is shown that the drying of a solid material represents a balance between the process of diffusion of moisture through the substance and of evaporation from its surface; and that these processes can be quantitatively represented by a differential equation which can, after modifications dependent on the material being dried, be integrated into simple and usable formulas which answer the question as to drying rate.—A.P.-C.

G-9; K-12. Tunnell Driers. GRAHAME B. RIDLEY. **J. Ind. & Eng. Chem.**, xiii, 453-60 (May, 1921). Tunnell driers may be built suitable for drying any material which can be handled economically on trays. Materials that will stand a higher temperature when wet than when dry can generally be dried most rapidly when they enter the tunnel at the hot end, as the temperature of the cold end then becomes the limiting temperature, and a higher average temperature may be maintained. The highest thermal efficiencies are obtained when the air is discharged at the highest relative humidity that the condition of the product will permit. It is usually more economical to use a large quantity of air at high velocity with recirculation, than to use a small quantity of air with low velocity and no recirculation.—A.P.-C.

G-9; K-12. Compartment Driers. W. H. CARRIER and A. E. STACEY, Jr., **J. Ind. & Eng. Chem.**, xiii, 438-47 (May, 1921). An outline of the field of the compartment drier, its advantages and limitation, of the methods of heating and of moisture removal, of the classification of compartment driers, and of the various types of compartment driers.—A.P.-C.

G-9; K-12 Spray Process of Drying. R. S. FLEMING, **J. Ind. & Eng. Chem.**, xiii, 447-9 (May, 1921). Outline of the apparatus required, nature of the process, advantages of preconcentration, recovery of product, temperature of drying, and application of the process.—A.P.-C.

G-9; K-12. Direct Heat Rotary Drying Apparatus. ROBERT G. MERZ, **J. Ind. & Eng. Chem.**, xiii, 449-52 (May, 1921). Description of the various types of direct heat rotary driers, of their general mechanism, applications, advantages and disadvantages, with a brief discussion of their efficiency and of the advisability of utilizing waste heat from another processes to heat them.—A.P.-C.

K-12. Paper Machine Building in Canada.—Pulp and Paper, xix, 462,466 (April 23, 1921).—Description of the more novel features embodied in the design and construction of the two fast newsprint machines completed by the Dominion Engineering Works for the Laurentide Company at Grand'Mere.—A. P. C.

K-12. Book Paper Machine. World's Paper Trade Review, lxxv, 18.—Details of a book paper machine installed by the Pusey & Jones Company for the Kimberly Clark Company.—A. C.

K-23. Old English Papermaking Revived.—World's Paper Trade Review, lxxv, 18.—A description of the process used by the American Writing Paper Company to secure a reproduction of the distinctive deckle edged paper used in the time of Queen Elizabeth.—A. C.

N-4. Electric Boilers.—World's Paper Trade Review, lxxv, 18.—An article dealing with the installa-

(Continued on page 912.)

PULP AND PAPER NEWS

The Toronto printers' strike still continues, to the great detriment of nearly every branch of the paper industry. In a way, there is some sense in a remark made to the writer, the other day, to the effect that time is on the side of the employers. For, were the strike to continue indefinitely, the latter would, in time, get all the trained labor they require, for their "open shops", even if they had to take unskilled labor and get it trained for themselves, as they are in process of doing today. The pupils who are coming forward to join the school of printers, organized in view of such exigencies, are, it is stated, of a very superior type – University graduates and others. They are attracted by what are considered high wages, combined with work that is not ultra-laborious, and there is no doubt that the employers contention that a superior education to that possessed by the average working printer would be highly advantageous in operation in the composing room has a certain weight with many of the public who have printing work to be done.

However, the striking printers are very far from being in the mood to let the employers have things all their own way. They are criticizing the work which is turned out by the "open shops", claiming that much of this work is far below the proper standard, owing to the alleged fact that non Union shops are unable to secure efficient men. In this connection, they lately published in the papers rather on effective educational in the form of a piece of work turned out by a non-Union shop with the errors all clearly noted after the fashion of a corrected proof.

Further, a publicity campaign is being inaugurated throughout the Province by the Toronto Typographical Union for the purpose of setting forth the Union's views in regard to the strike situation. A staff of men, comprising superintendents and foremen who have been called out from the various shops which refuse to concede the forty-four hour week, has been busy lately at preparing literature to be mailed to every printing establishment in Ontario. The Union officials state that the Toronto Labor Temple, addressing envelopes and there are eighty-two shops in Toronto which have already signed the forty-four hour week agreement. At a recent meeting when the men received their strike pay it was announced that the question of the printing required for the York Township Council had been taken up, and the statement was made that the authorities had decided to ask for tenders from the forty-four hour shops. A committee is also to be nominated to wait upon the Board of Control, to protest against the admission into the city of out-of-town printers on the ground that they are likely to swell the ranks of the unemployed. It is claimed that men are coming to Toronto from country points in consequence of the strike.

The report of the International Typographical Union shows that its total membership is now 75,000. Of this number, 15,000 are not working at their trade, but are still members of the Union. The report states that 40,000 members are working in the book and job industry, and that 33,000 members are signed up and working on a forty-four hour week — a fact which is adduced as proof that the forty-four hour week principle has won. There are 8,000 members still on strike in Canada and the United States. The recent convention decided to continue the strike indefinitely — an attitude which is presumably rendered possible by the surplus of receipts over expenditures, which is stated to have been $70,000 for the month of July, and to be liable to be increased every month by reason of the withdrawal of assistance from other printing industries.

Considerable interest was evinced in paper circles in the slumping of International Paper Common on Wednesday of last week to 38½—a new low record for the current year — by reason of the fact that the decline was attributed to rumors that the company may announce another reduction of $15 a ton in the price of newsprint, within the very near future. Rumors — and rumors of rumors — are very rife with respect to newsprint price. A few weeks ago, rumors in this county were to the effect that some producing concerns here had reduced their prices considerably, and it seems that Wall Street deems it likely that the International would reduce its prices to meet this competition — if it exists.

Messrs. T. S. Wellings and Co., of Englehart, Ont., are erecting a new rossing plant at Connaught in Northern Ontario, and good progress is being made with construction.

The Toronto Globe, last week, printed a letter, dated from London, Ont., and signed "A Preferred Shareholder", suggesting that an investigation into the Riordon affairs should be made "either by the Government or someone whom the public feel they can trust." The letter continues: "The stockholders feel there should have been a general meeting of the shareholders called, whereby they would have an opportunity to ask any questions they desire, also to appoint a competent committee to watch their interest in the meetings taking place daily in connection with the proposed reorganization."

At a meeting, last week, of the directors of the Howard Smith Paper Mills, Ltd., Mr. J. Anderson, head of the firm of J. Anderson and Co., Inc., New York, was elected a director. It was stated at the meeting that the new pulp mills at Cornwall were now running to about 75 per cent. capacity.

The heavy cost of publishing is given as the reason for the discontinuance of the Chatsworth News, of Chatsworth, near Owen Sound, Ont. The paper, which was established some 36 years ago by the late Mr. George Blyth, is now incorporated with the Owen Sound Sun-Times.

The statement is made that Mr. G. R. Hall Caine, a business associate of Mr. F. E. R. Becker, of the Becker Paper Mills, of England, will shortly visit Canada in connection with reorganization plans which will affect the North American Paper Company's trust. The Company is understood to have been working on a plan whereby the holders of the trust stock would receive Saguenay Pulp and Power stock, or cash in exchange for trust stock, according as they might choose. Nothing has been heard lately of the completion of this plan. Some months ago, it may be remembered, the Becker Mills, which are represented by Mr. Hall Caine, were reported to be largely interested in the Canadian undertaking, and, in any event these mills are large consumers of the groundwood pulp manufactured at Chicoutimi.

According to a despatch from Chatham, Ont., Mr. Arthur Stringer, the well-known writer of fiction, has received authority to organize a Western Ontario section of the Authors' Association of Canada, and it is probable that steps will be taken shortly towards organization. The territory embraced by the Western Ontario section, with headquarters in Chatham, will, for the present, extend some distance east of London.

Lord Northcliffe has just added another 300 acres of pulpwood lands to his vast holdings in Newfoundland. The proprietor of many periodicals and newspapers, who owns a big paper mill at Grand Falls, has just given $50,000 for his purchase of 300 acres in the Conception Bay district.

After playing brilliant golf on the first day, Marcus Greer of the Laurentide Co. had a slump and was defeated in the championship tournament at Winnipeg last week.

The live wires of the Brompton mill at East Angus are planning a fine program of sport and entertainment for Labor Day.

The firm of Krupp, the birthplace of German munitions, is now making paper mill machinery. A unique machine is a tandem sheet calender, each stack having 10 rolls, with bands to carry the paper through.

Mr. Eagle of the Chicago Daily News and Mr. T. E. Pope of the Canadian Export Paper Co. were visitors at East Angus recently. They motored to Doucett's Landing and crossed in a launch to Three Rivers to visit the St. Maurice Paper Co.

Mr. Henning Helin, consulting expert on pulp manufacture is in Europe and expects to return to Vancouver in about two months.

The Allen Electrolytic Cell Co. of Portland, Me. have sent an engineer to Haiphong, French Indo China to start up a chlorine plant of 84 Allen Moore cells in connection with the pulp and paper mill operated there by the French.

WAGES MORE THAN DOUBLED.

In a recent address, Mr. R. S. Kellogg, secretary of the News Print Service Bureau said: "In 1914 the yearly wage of an employe in the paper mills made an average of $676, while in 1920, the year in which the price of this year's paper was fixed, this average was $1,486. On the other hand, the production of each employe in 1914 was eighty tons, but under the higher wage in 1920 this production was cut down to sixty-eight tons.

The pay roll labor costs per ton of paper in 1914 amounted to $8.48, while the cost per ton in 1920 was $21.87. A cord of wood used in making paper in 1914 cost the mills only $12.98, while this cost was boosted to $29.16 in 1920.

The depletion of raw materials for making paper is serious, but does not, constitute a crisis, Mr. Kellogg declared. The solution of the problem lies in reforesting.

NEWSPRINT PRICE CUT BY M. & O.

The Minnesota and Ontario Paper Company announced a price of $88 per ton for newsprint paper for the months of October, November and December. This is a further voluntary reduction of $10 per ton from the contract price, and is in addition to a reduction already given of $5, making a total reduction of $15 per ton from the price previously fixed by contract for the last quarter of 1921.

PICHE DESCRIBES AIMS OF FORESTRY.

Canada's timber resources are fast becoming exhausted. J. G. Piche, chief forest engineer of the province of Quebec, declared in an address to the Rotary Club at Quebec. He emphasized the necessity for all citizens, as well as for the Government, to take steps to safeguard the forest in every possible way.

"Forestry is an art born of necessity", said Mr. Piche, "and we, like most other countries, are only beginning to realize the necessity for conserving our forests now when their resources are fast becoming exhausted. The aims of forestry are, first to render productive all lands which are unfit for the cultivation of other crops, and for this reason the department insists on the proper classification of soils. We also wish to reforest as soon as possible three million acres of waste land. The Government has opened a nursery at Berthierville, and begun demonstration plantations at Lachute and elsewhere and it is expected that private initiative will follow suit.

"The second aim of forestry is to produce as much timber as possible per acre, and this implies the employment of adequate treatment in each type of forest and the carrying out of necessary improvements, such as thinning, planting, etc.

"The third is to make lumbering conservative by removing all timber in each tree, small tops, low stumps, and the use of inferior species for the building of camps, roads and bridges will accomplish this end.

"The fourth is to study properly the subject in order to know the requirements, and the last, and one of the most important aims of forestry, is to protect the woods so as to insure the safety of the headwaters of streams, shifting sands, etc., and the protection of forests against fires, which cause such great losses every year. It is of vital importance that forests should be fireproof.

"The educational campaign must be conducted by everyone in every locality, and Rotarians should assist in this work. They could do so if every Rotarian were to become a member of the Canadian Forestry Association."

POSSIBILITY OF LUMBER SHORTAGE.

That curtailed production is likely to result in a shortage of lumber next year is the prediction of a Three Rivers lumber dealer, who states that the number of men being sent into the woods this year will be considerably reduced. Demand for nearly all lines of lumber is slow and as manufacturers and wholesalers are unable to dispose of what stocks they have on hand they do not feel justified in adding to their holdings more than appears perfectly safe under present conditions.

Pulpwood.

We understand that the local paper mills will do very little cutting this winter and some of them in this section will not cut at all. Those firms sending men into the woods will employ them at much lower wages than were paid last year. Our Shawinigan correspondent informs us that the Belgo and the Laurentide will not cut this year and that large supplies of food on hand owned by the companies may be purchased by Shawinigan for the poor and unemployed.—St. Maurice Valley Chronicle.

DEATH TAKES J. S. CROWELL.

J. S. Crowell, former owner of the Crowell Publishing Company, Springfield, Ohio, publisher of the Woman's Home Companion, American Magazine and Farm and Fireside, died Aug. 17 in Cincinnati. He had been ill with cancer for many months.

(Continued from page 909

tion of electric boilers in the paper mill and the advantages therefrom. (See *Pulp and Paper*, Aug. 4, 1921.) A. C.

N-7. How to Increase the Efficieney of Waterpower Plants. CHARLES M. ALLEN, **Paper,** xxviii, 7 (April 20, 1921); **Paper Trade Journal,** lxxii, 16; **Paper Mill,** xliv, 16. Description of the Alden dynamometer (See **Transactions, A.S.M.E.,** xxxii, p. 275) and the method of using it, followed by a discussion of the following points on the efficiency of waterpower plants; gate opening, wheel settings, inspection and cleaning of wheels, keeping trash racks free, obstructions in the draft tube and tail race, proper speed for maximum efficiency. A.P.-C.

R-2. Bibliography of Papermaking.—Clarence Jay West, chairman, Committee of Bibliography of the T. A. P. P. I.—**Paper,** xxviii, 7 (April 20, 1921).—Comprehensive bibliography of books and articles published in 1920.—A. P. C.

R-5. Newfoundland's Pulp and Paper Industry. Pulp and Paper, xix (May 12, 1921). Brief outline of the present status of the industry in Newfoundland.—A. P.-C.

R-5. Paper Industry of Austria, Hungary and Czechosiovakia.—Paper, xxviii, 7.—Brief sketch of the present status of the industry in those countries.—A. P. C.

R-5. Statistical Summary for 1920.—**Paper,** xxviii, 7 (April 20, 1921).—Summary of the production, shipments, and stocks on hand for each month of 1919 and 1920 of United States Paper mills, classified according to grade of paper manufactured; and of stocks on hand at the beginning and end of year, total quantity produced and shipped during the year, by grades, for 1917-1920 inclusive and also production, shipments, and stocks on hand of pulp mills (classified according to grade) for all pulp mills.—A. P. C.

R-7. Prevention of Industrial Troubles.. WARFIELD WEBB, **Paper,** xxviii, 6 (April 13, 1921. The danger of strikes can be minimized and labor disputes obviated if the employers will prove to their employees that they are human as well as the latter and have a right to be heard. It is simply putting the golden rule into practice and while still retaining their authority showing they are willing and eager to treat their employees fairly.—A. P.-C.

R-7. Job Analysis and the Employee. WILLIAM O. LICHTNER, **Paper,** xxviii, 4 (March 30, 1921). A systematic job analysis is necessary for the purpose of: (1) standardization of jobs; (2) correlation of jobs; (3) determining the job's relation to routine work through office or factory; (4) determining its relation to salary policy; (5) determining its relation to employment; (6) adapting machines or equipment to individuals when possible. Job analysis brings out the necessity of establishing a competent training staff which will take each new workman and intellegently instruct and work with him until he can accomplish both the quantity and quality set by the standard. It benefits the employee in many direct ways, such as determining the standard of work expected of him; simplifying his work and making it easier to master; making him fit more easily into the general scheme of the organization — to become an integral part of it; increasing his wages ,etc.—A. P.-C.

R-11. Forest Products Laboratories of Canada. A R. R. JONES, **Pulp and Paper,** xix, 535-6 (May 19, 1921). Outline of the scope of the work of the Forest Products Laboratories of Canada and of their importance to the wood using industries of Canada.—A. P.-C.

R-12.Why We Have a Cost System. S. B. COPELAND, **Paper.** xxviii, 6 (April 13, 1921). At the Eastenr Manufacturing Company, the following reports are compiled by the cost department: period statement of income, assets and liabilities; estimated cost of paper, and sales reports; control of manufacture; control of inventories and purchase of materials; control of cost of repairs and new construction. These have been found essential in determining the sales policy and making decisions on manufacturing problems. The expense of obtaining this information in comparison with the losses that could readily occur because of not having this information, is considered to be negligible. See also Pulp and Paper, Aug. 11, 1921.—A. P.-C.

R-12. Cost Association of the Paper Industry.— Paper, xxviii, 7; **Paper Trade Journal,** lxxii, 16; **Paper Mill,** xliv, 16.—Account of the meeting held in New York April 13, 1921, including the following papers: "Some Practical Aspects of Installing Cost Systems," C. Oliver Wellington; "Importance of Costs and their Relation to Manufacturing and Banking," Ellery A. Baker; "The Budget System," Durward Earle Burchell; "Preparation of Cost Figures for Administration Control", Harold Dudley Greeley.—A. P. C.

R-12. Prices of Raw Materials for Papermaking.— Paper, xxviii, 7 (April 20, 1921. Graphic charts showing average weekly prices for the last ten years of: domestic bleached soda pulp, domestic unbleached sulphite, foreign unbleached sulphite, domestic bleached sulphite, foreign bleached sulphite, repacked thirds and blues (domestic), new shirt cuttings (domestic), No. 1 hard white shavings, No. 1 roofing rags (domestic), groundwood, No. 1 whites (repacked domestic rags A. P. C.

R-12. Standardization in Paper Mill Cost Systems. T. J. BURKE, **Paper,** xxviii, 6 (April 13, 1921). Text of Secretary Burke's address at the meeting of the Wisconsin Division of the Cost Association of the Paper Industry, March 24, 1921, at Nenah, Wis.—A. P.-C.

R-13. Technical Section of the Paper Makers' Association of Great Britain and Ireland. Paper Maker and British Trade Journal, lxi, 2. An account of the meetings at Manchester and Aberdeen, including a paper by T. D. Nuttall on "Development from an Engineering Point of View" and a criticism of W. Adamson's Paper on "The Utilization of Heat and Power in Paper Mills."—A.C.

R-13. British Paper Makers' Association. World's Paper Trade Review, lxxv, 16. Important subjects affecting the industry, which were discussed at the annual general meeting.—A.C.

R-13. Technical Association of the Pulp and Paper Industry's Annual Meeting. Paper, xxviii, 7 (April 20, 1921); **Paper Trade Journal,** lxxii, 16; **Paper Mill,** xliv, 16. Account of the meeting held in New York, April 12, 1921, including reports of the secretary, the executive committee, committee on bibliography, abstract committee, committee on vocational education, committee on coated and processed papers, soda pulp committee, sulphate pulp committee, and papers presented.—A. P.-C.

R-13. National Paper Trade Association's Meeting. —Paper, xxviii, 7; **Paper Trade Journal,** lxxii, 16; **Paper Mill,** xliv, 16.—Account of the meeting held in New York, April 13, 1921, including address of retiring president Ross P. Andrews, and Secretary Ridgway's annual report.—A. P. C.

UNITED STATES NOTES

Charles Lathrop Pack, president of the American Forestry Association, has sent out a letter to the governors of several States suggesting the appointment of representatives to attend the discussions at a forestry conference to be held this week at Woodstock, N. H. Mr. Pack wants all of the Northeastern States to be officially represented at the conference. "This annual New Hampshire conference is one of the most important of the year," Mr. Pack wrote in his letters to the governors. "The big manufacturing plants of New England and the other eastern States are absolutely dependent upon forest products to keep going. Connecticut spends $3,000,000 a year in freight rates on forests products which she should be producing almost at her factory doors. There are 81,000,000 acres of idle land in the East and Middle West that should be growing trees. Three-fifths of our original timber is gone and half of what is left is West of the Rocky mountains. That means big freight bills for Eastern users. Some of the speakers at the conference will be Gifford Pinchot, forest commissioner of Pennsylvania; Prof. J. W. Toumey of the Yale forest school, S. B. Detwiler, chief of the United States Blister Rust Control; Dr. H. H. York of the University of West Virginia, and Dr. Eloise Gerry, of the United States Forest Products Laboratory.

On application of Col. Ransom Gillette, representing the International Paper Company, Supreme Court Justice McPhillips has enjoined the Corinth, N.Y. village trustees from voting authorization of a $20,000 bond issue to pay special police employed by the trustees as a result of the International Paper Mills strike there. The injunction is returnable September 10. It orders the trustees to show why between $12,000 and $15,000 has already been expended to pay for special policemen and why the money should not be refunded to the village. Shortly after the company began importing strike breakers into its mills the village officials placed on duty a large number of policemen for special work. These men were mostly strikers, and most of the trustees are strikers also.

E. Vernon Fox, who is widely known to the trade in the Middle West, has resigned as secretary and vice-president of Arthur R. Ray Company, the Chicago paper jobbing house, with which he became identified last January when he severed his connection with the Nekoosa-Edwards Paper Company. Mr. Fox has been actively engaged in the paper trade of the Middle West since 1898, serving several leading establishments. He is not prepared to state at this time what his future connections are to be.

The Mittineague and Woronoco mills of the Strathmore Paper Company are closed due to slack business. The date of reopening, it was announced to the 600 employees who have been laid off, will depend mainly on business conditions. Extensive repair work will be undertaken during the shutdown.

The Newton Falls Co., Watertown, N.Y., has elected for its president Arthur J. Baldwin of the McGraw-Hill Co., New York City, to succeed Frank L. Moore. The latter withdraws from the management of the company, giving up the posts of president and general manager held by him since 1907. Mr. Moore's withdrawal was agreed upon last year when the Watertown concern was taken over by the McGraw-Hill Company and the United Publishing Corporation. He is to continue as a director of the company. Changes have been completed in the mill, adapting it for the production of book paper. Mr. Moore has been prominently identified with the paper industry since 1900 when he established units of the Remington group of mills and brought them to a paying basis. He has been president of the American Pulp and Paper Association for several terms. While he has made no announcement as to his future plans, it is not likely Mr. Moore will remain very long without associating with some enterprise in which he will play an active part.

Federal customs officers at New York and elsewhere have received instruction to watch out for shipments of pulp and paper from abroad and compare prices with a view to preventing violations of the anti-dumping provisions of the emergency tariff law of May 27 last. The New York appraiser, acting under authority of Section 201 of the tariff act, has called upon two importers receiving recent consignments from Scandinavia and Germany to give bond to cover any special anti-dumping duty which may be imposed by the Secretary after investigation. These actions are viewed in some quarters as initial moves in a campaign to curtail, or cut off altogether, importations of foreign pulp and print paper. This would undoubtedly work out to the benefit of American paper manufacturers who have been working for a pulp and paper tariff.

At the Montague, Maine, plant of he International Paper Company, two waste gates in the dam were wrecked by dynamite last week. Company officials declared that the violence was resorted to with the evident object of halting logging operations. A sheriff's posse was sent to the scene of the disturbance, and at last accounts there was no further trouble.

Ellis J. Staley, New York State Conservative Commissioner, has organized a bureau which is to make a study of stream pollution and its prevention. The law authorizes the Commission to investigate the extent and character of the pollution of rivers, lakes, streams, bays, harbors and other waters by sewage, industrial waste and other refuse. Within this province, the new bureau will carry on investigations to be used as a basis for formulating plans for the control of such waste disposal and the establishment of definite standards of pollution. It will endeavor to unite all the interests concerned, and through co-operation with all agencies, both governmental and private, engaged in any phase of the conservation of water, seek a solution of this important problem.

C. A. Jones has resigned from the staff of the American Writing Paper Company and as Chairman of the Committee on Beater Furnish of the Cost Association of the Paper Industry to assist Durward F. Burchell at the school of Industrial Accounting, Harvard University. In order that the work of this important committee may not be held up, Henry W. Miller, also of the American Writing Paper Company, has offered to take the place as Chairman.

CANADIAN TRADE CONDITIONS.

Toronto, 27th August.—General business conditions in the paper trade have not changed much since last writing. But the improvement then noted, in certain lines, has been maintained, and, perhaps, in some instances has increased. Orders are certainly coming along a good deal more freely than was the case a month or two ago, and generally for somewhat larger, and, in not a few cases, considerably larger, consignments. Early in September, according to common expectation, business is likely to take a sharp turn for the better. There have been no appreciable changes in prices, though that of newsprint continues to be the subject of a good deal of speculation and discussion, which are not likely to be lessened by the announcement, reported elsewhere in this issue, that the Minnesota and Ontario Company has announced a price of $88 a ton for the months of October, Nevember and December. In no line, with the possible exception of newsprint, are prices likely to go much lower in the near future. For one thing, they have now touched bottom according to the manufacturers. For another, there is little encouragement to reduce them as it was found that the reductions made hitherto did not stimulate business, — if anything, rather the contrary.

There is little doubt but that the printers' strike has operated very detrimentally on the paper business, in nearly all lines. As regards export business with Great Britain—a business in which kraft, newsprint and boards are the three lines principally concerned—there are encouraging signs of revival in evidence. This business has been slack recently, and still continues too sluggish, because the stocks in Great Britain have not yet been fully liquidated. The demand being small, prices have remained low. But, as soon as ever the liquidation of stocks have proceeded beyond a certain point—and the best information obtainable is to the effect that that point has nearly been reached now—prices will go up.

In connection with the export trade, in some lines, a word of reassurance, as to the quality of the competition from Scandinavian countries, may not be out of place. It is certain that the costs of production in Norway and Sweden today, whatever may have been the case in the past, are now so high that the prices quoted by Scandinavian concerns cannot possibly be based on those production costs. The reason why they are offering both pulp and paper at the prices at which they are, in fact, offering them today in Great Britain is because they are largely over-stocked and the banks are pressing them for payment. Competition of this kind need cause no more than a very temporary disquiet among Canadian concerns doing an export business. For it is obvious that it is a kind of competition which in the very nature of things, cannot endure. If there should be any surprise at what has just been written as to the high production costs in these Scandinavian countries, it may be pointed out that labor, in Norway and Sweden, is now paid after a very different rate from that at which it was paid in the days before the war, and, not only that, but it now works very much shorter hours than it did in those days. Further, the cost of coal and various necessary materials has mounted immensely in those countries. As regards quality, it is certain that, so far as kraft is concerned—and it is kraft which comes, more directly than any other line, into competition with Norway and Sweden, it is certain that Scandinavian countries have nothing superior to the Canadian product to offer.

Turning again to the general domestic situation in the trades, it is advisable that wholesalers should caution their customers anent the risk of allowing stocks to get too low. Already, in certain lines, the orders that are coming in partake too largely of the nature of "rush" orders for immediate delivery. In the case of wrapping papers, for example, there is thus a distinct danger that the Christmas trade may revert, to a certain extent, to the conditions which obtained last year when the mills became so glutted with orders that it was found impractible to give deliveries in time. With the best will in the world, the mills cannot perform impossibilities.

NEWSPRINT. — Many of the mills continue to do a nice business. It is possible that there is a certain holding off from buying in expectation of a reduction in price. But, as soon as this question is settled one way or the other, a noticeable increase in buying will result.

BOOK AND WRITING PAPERS.—The business in book and writing papers and envelopes, etc., continues to improve in a gratifying manner. The mills could do with an increased demand for the higher grades, however.

WRAPPING PAPERS.—A really substantial briskness is being exhibited in wrapping paper. Not merely are orders coming along freely and in greatly increased volume, but they are also coming in without solicitation. This is encouraging in itself, and, further, from the fact that, more than most other branches of the paper trade, the market in wrapping papers affords a barometer of the general business situation in the country. It is significant that many orders are coming in from the West, where, very largely, the optimism of the country seems, at the moment, to be principally residing.

PARCHMENT.—The parchment mills are working to capacity on orders calculated to keep them busy for a nice while ahead.

BOARD.—The board mills are experiencing a revival of business and those in Ontario are working full time.

TOILETS AND TISSUES. — The mills turning out toilets and tissues are satisfactorily busy.

RAGS.—There is some little expansion of activity in domestic rags and roofing stock, and the expectation is that this will be considerably enhanced in two or three weeks' time.

"A whole lot o' de talk dat goes 'round," said Uncle Eben, "ain't no mo' real help in movin' forward dan de squeak in de axle."

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INQUIRIES SOLICITED:

NEW YORK MARKETS.

New York, August 27.—(Special Correspondence). Trading in paper in New York this week has developed few, if any, new market features. Business is still of comparatively limited compass. There is a fairly consistent demand for most kinds of paper, but the aggregate supplies being absorbed by consumers are of lighter volume than in busier times and manufacturers are mostly in want of orders. Information obtained from jobbers in this city indicates that trade activity is slowly but surely increasing. Paper dealers here say that demand from printing houses is gradually growing, that department stores are buying paper in somewhat larger quantity, that paper box manufacturers are absorbing slightly increased amounts of paper and board, and that the movement of supplies in various directions is well on the road to full recovery. Reports in this connection are invariably qualified by those giving them saying that demand is as yet considerably under normal, but much satisfaction is expressed over the more favorable position of the market, and confidence is generally felt that business in paper will undergo appreciable expansion during the next several months.

One of the liveliest branches of the market at present is in tissue papers. Consumers of fine tissue apparently are preparing for the pre-holiday season which is due now within several months and when consumption of fine tissues is at its height, and some orders for sizeable tonnage of white and manila tissue have been placed lately. Mills making this kind of paper are said to be running at very close to capacity, and prices on tissues rule quite firm. No. 1 white, basis 20x30 inches, is bringing 95 cents to $1 per ream f.o.b. New York, while No. 2 white and No. 1 manilla, basis 24x36, are selling at about the same figures. Coarse tissues also are moving well. Demand for napkins and towels is easily as voluminous as it has been at any time during the past year or two, and manufacturers of this class of paper goods are keeping busily engaged. This is a branch of paper industry which will undoubtedly hold its increase in business gained during the war period. Restaurants, hotels, stores and households which substituted paper napkins and towels for linen when the latter rose in price to an almost prohibitive level are likely to continue to use paper, and members of the trade look for a large growth in paper consumption in this direction.

If anything, the book paper market shows a little firmer tone. Prices have not advanced but they appear to be stiffening to an extent, and manufacturers seem set on securing at least 6 cents per pound for machine finished book paper, whereas a large majority are quoting in excess of this figure, between 6.25 and 6.50 cents a pound at delivery points being the range commonly quoted. It is true that several orders involving a fairly large tonnage of machine finished book were taken some few days ago at a basis under 6 cents, one order, it is said, for 5,000 tons being accepted by a mill not far from New York at 5.75 cents f.o.b. this city, but it is understood that these commitments were entered into with the idea of keeping the mills operating at something approaching capacity, and mills in the Middle West are not attempting to compete at any such prices.

Wrapping papers are moving in a routine way at moderately steady quotations. No. 1 domestic kraft is quoted at 5.50 to 6 cents, and No. 2 grade at half a cent per pound less, and while individual orders are said to call for rather small amounts, the total quantity of paper being bought is reported fair for this time of the year. Fine papers are in a quiet condition. With business in various industries slow it naturally follows that consumption of writing papers is not what it ordinarily is, and this is clearly reflected in the volume of orders mills are receiving. Holyoke mills are reported running on an average between 50 and 60 per cent of capacity, but it is understood that a good many orders are now being filled from stock, which would run the percentage of sales up a little higher than mill operations would suggest.

The board trade seems to be a little livelier. Mills are said to have accumulated orders during the time they were closed down a few weeks ago and most of them are now reported running at a fair rate of capacity. Demand is insufficient to cause any enhancement of values, but with old paper costs mounting again, it is likely that manufacturers will be obliged to advance their quotations on board. Prices at present afford scant room for profit, and if raw material goes any higher, manufacturers will either have to market board at a loss to themselves or else mark up prices.

GROUND WOOD.—Mechanical wood pulp is in a firm market position. Demand is fairly heavy, considering the season of the year, and supplies show signs of diminishing as grinding plant after grinding plant is compelled to close down because of low water. There is little doubt that the situation in chemical pulp is having influence on ground wood and is, in some measure, keeping prices on the latter from advancing. Importations of ground wood also are a market factor. The amount of mechanical pulp coming into the States from European sources is not large, it is authoritatively

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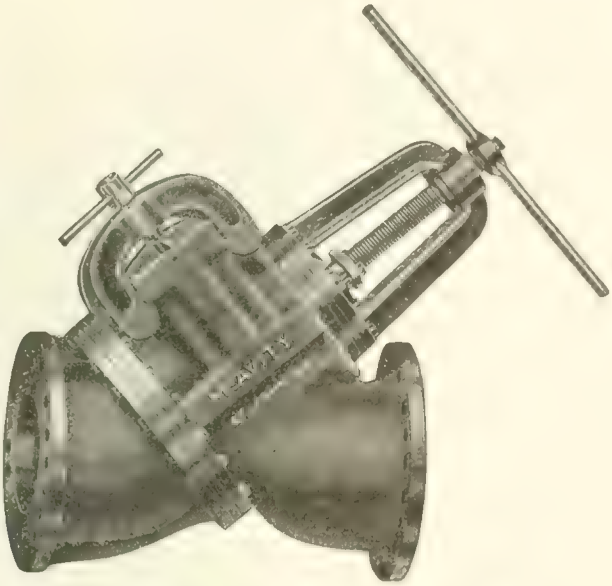

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stated, but the fact that importers are selling this pulp at prices under those prevailing on domestic ground wood has its effect on the market. Sentiment in the trade continues bullish, however, and many express the opinion that unless production increases substantially during the next month or two, ground wood values are due to undergo considerable enhancement. Quotations on domestic prime spruce ground wood range from $28 a ton f.o.b. grinding plants upward, with some producers asking as high as $32.

CHEMICAL PULP.—There appears to be a little firmer tone to chemical pulp. This apparently is due to most of the spot stocks of imported pulp having been removed, which keeps owners of such pulp from disposing of supplies at sacrificed prices, since manufacturers in the Scandinavian countries and Germany are becoming firmer in regard to prices on pulp for forward shipment from primary sources. Prices have not advanced, but the slashing procedure seems at an end, and there is more regularity to the quotations named.

Domestic pulps are in an uncertain price position. One of the foremost producers of bleached sulphite in the States is reported to be advising customers that he intends to continue manufacturing until he has ground up present stocks of wood, after which he asserts he will close his plant down until such time as conditions change where he can compete with foreign pulps. This indicates that domestic manufacturers do not propose to make pulp to be marketed at a loss to themselves, and if this policy is generally followed a different complexion is likely to be given the pulp situation.

Arrivals of foreign pulp continue to be large. Just for example, shipments reaching New York this week have included 2,700 bales from Trondhjem, 3,938 bales from Gothenburg, 12,600 bales from Helsingfors and 1,105 bales from Rotterdam.

RAGS. The papermaking rag market lacks important activity. Few mills are operating as buyers, and those that are placing orders off and on are absorbing together but a light total amount of goods. Felt mills appear to be well stocked, and writing paper manufacturers apparently have all the rags in store that they need for a time, and with these two major classes of consumers mostly out of the market, there is but a narrow outlet for supplies. Prices depend largely on the dealer issuing them. If the dealer is hard pressed financially, he is apt to name low figures with the hope of obtaining an order; if on the other hand the dealer is not obliged to convert rags into money, he is likely to be more independent concerning values, because it must be said there is a feeling among traders that prices are touching bottom and that any revival of demand from mills will cause values to advance.

PAPER STOCK. — Waste paper has strengthened considerably and prices on most grades are on higher levels than have prevailed in some time. This seems due more to a growing scarcity of old paper caused by the refusal of collectors to gather material at ruling prices than at any increased call for supplies from mills. No. 1 hard white shavings are quoted at around 2.90 cents a pound f.o.b. New York, No. 1 soft white shavings at 2.25 cents, ledger stock at 1.50 cents, No. 1 old kraft at 1.65 cents, old books and magazines at 90 cents a hundred, white news cuttings at 1.50 cents, folded newspapers at 40 cents and No. 1 mixed paper at 32½ cents. Even at these advanced figures dealers are accepting orders cautiously and are mostly refusing to contract for large tonnage for forward shipment, with the result that current business mainly involves small lots for prompt delivery.

OLD ROPE AND BAGGING.—Old rope rules quotably firm at around 4 cents a pound for domestic manila rope in No. 1 condition, and there have been reports of sales at slightly higher figures, mills in the West reported paying up to 4.25 cents at shipping points. Old bagging is dull and prices continue to recede, it being stated that No. 1 scrap bagging has been purchased by mills down to 60 cents a hundred pounds in New York.

TO RECLAIM PULP FROM NEWSPAPER.

Peter V. King is organizing a $200,000 company at Kalamazoo, Mich., which is to engage in the reclamation of pulp from waste paper. Plans call for the erection of the first unit this fall, with an initial production of 40 to 50 tons daily. Mr. King will use a reclamation system perfected by himself. He was several years general superintendent of the Monarch Paper Company and of late years has been western sales representative for Castle, Gottheil & Overton. For many years he has been putting all his spare time into the development of his present system of pulp conversion.

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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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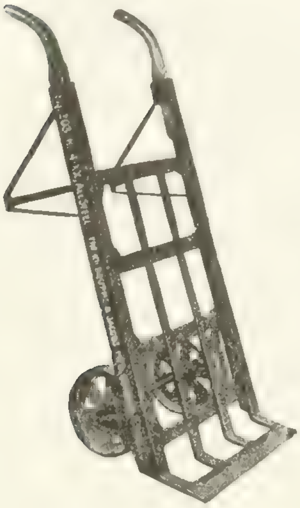

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EDITORIAL

THE TIDE HAS TURNED.

There are a good many people who are still looking through dark glasses at the present industrial situation and there are reasons for considerable apprehension in some respects with regard to the coming winter. The situation will be by no means an easy one for many people and the co-operative generosity and even sacrifice on the part of those more favorably placed, will be required in many instances to prevent extreme hardship on the part of those who will undoubtedly be affected by unemployment and short hours in industries which have recovered least from the world-wide business depression.

The Pulp and Paper Industry, while it has felt severely the general difficulties, has not been so seriously affected as some others although several important lines have registered almost a record for extreme dullness and recovery has not been as rapid as had been hoped for. On the whole, however, and with due consideration for the difficult problems which are still to be solved, and with recognition of the very considerable strain and burden still to be borne by many concerns in the industry, there is no doubt but that business generally is better than it has been for several months and that there is good reason for expecting a continued, though perhaps slow, improvement.

A feature of the situation which has caused considerable anxiety has been the dumping of European pulp at ridiculously low prices on the American market. This is a field which has been considered the natural outlet for Canadian production and the invasion of European pulp has naturally caused a lot of serious thinking. With kraft pulp, for instance, selling as low as 2c per pound in New York, there was good reason for suspecting something out of the ordinary in the transaction, instances of sales at prices which we are not only quite out of all proportion to the cost of production, but also quite outside the range of anything like equal competition by American producers, resulted in an investigation of the situation. Though certain that such pulp is being sold on this side for less than it brings elsewhere and as this is contrary to the emergency tariff bill which is still in force in the United States, it is entirely probable that such sales will soon cease. Another factor which is very likely soon to operate towards the elimination of unfair competition from European sources both with American and Canadian producers of pulp is the economic situation in Europe, particularly in Germany. Recent careful investigations over there indicate that cost of production is not going to continue at figures so entirely out of proportion to costs on this side as might be inferred from recent sale prices. The spurt of 12 to 14 hours of labor for a wage of almost nothing is bound to fade out and signs are not lacking that such is beginning to be the case. Furthermore, the better industrial situation in England and the slow, but sure recovery in Europe and other markets for pulp, will bring some relief to American and Canadian producers. It is one thing to dispose of stocks on hand at a loss in order to obtain ready money and it is another thing to continue production at a loss. Such operation cannot be carried on indefinitely and with prices of pulp even approaching production costs on the other side the outlet for the Canadian product must improve measurably. We feel that such an improvement is in sight although there may still be considerable stocks in the hands of consumers as well as some stores of high cost pulp at the mills. Some of these costs will undoubtedly have to be written off and charged up to profit and loss but, having done so, the field should be clear for new production at a profit, even at the reduced prices which are now ruling.

While we hear rumors every day regarding what the price of newsprint will be for the last quarter of the year, manufacturers seem disinclined to make a public statement with regard to it. The expectation of consumers is certainly that a price less than $95 per ton will be announced before the first of October and many of them are consequently holding off for any advantage they may obtain by ordering at a possible lower price. Some of them have pretty definite ideas as to how much the reduction will be. Anticipation of a reduction is being reflected and prominently featured in connection with stock quotations. Those who gamble in stocks always have their own reasons for their thoughts; it is barely possible however, that some of those who magnify the fact of a decrease in price lose sight of the possibility of a corresponding, though perhaps not so large, decrease in cost of production. The public during the past few years got a rather exaggerated idea of the earning power of pulp and paper mills and apparently based their calculations on the abnormal dividend paid a few times on common stock, perhaps losing sight temporarily of the sound though conservative possibilities of the preferred stock and bonds. Another feature has been the dividing of shares and the expectation that the same investment thus split would continue indefinitely to pay the same dividend on divided shares as was originally anticipated on the single share. Some of our mills have increased their earning power to an extent almost proportionate to the increased share units and most of the companies have maintained their ability to pay dividends even though in some cases they have deemed it wiser to retain the cash for emergencies.

Our idea of the matter is that if a moderate cut in the price of paper will establish confidence on the part of the consumer to the extent of increasing the amount consumed, it will be better all round to sell the maximum output of the mill with the attendent employment of full staffs than to bolster up the price of any product in a falling market for the benefit solely of shareholders if such action might restrict consumption and react unfavorably on the chance of employing all hands in the mill. An employer's first duty is to provide employment. We feel that the next price that is announced for newsprint, if it is made on the basis of present cost of production, will stabilize the market to such an extent that consumption and production will be increased.

ARTICLE POSTPONED.

On account of a delay, doubtless caused by the holiday, in the arrival of several cuts, the article on the "Structure of Straw", which was promised for this week has to be held over till next.

MR. GRAY LEAVES GARDEN CITY PRESS.

Mr. F. W. Gray, whose office has been just down the corridor has accepted the position of assistant to D. H. McDougall, vice-president of the British Empire Steel Corporation. Mr. Gray came to Canada in 1904 in the service of the Dominion Coal Company, remaining with them until 1918, as confidential assistant to various general managers. He went to the Nova Scotia Steel & Coal Company in that year, remaining for one year. In 1919 he became editor of the Canadian Mining Journal and of Iron & Steel of Canada. He received his early training in South Yorkshire coal mines under the late G. Blake Walker, recently president of the institute of Mining Engineers. Mr. Gray is a member of the latter society; member Canadian Mining Institute, and ex-council member and associate member Engineering Institute of Canada.

Our best wishes go with him.

COBWEBS.

An American paper mill is suing the company that sold it sulphite pulp. After using 100,000 pounds the mill found itself duped "through false representation." The $63,000 damages claimed would pay a competent chemist a long while, and protect the mill on quality material. The idea of using 50 tons of pulp without knowing its quality!

The editor made a curious mistake in referring to Consolidated Water Power and Paper Co. by mentioning George H. Mead as president of the Company. The head of the Wisconsin Company is George W. Mead, and our hearty congratulations are extended to him on the success which he, too, has attained.

As if in answer to our suggestion for better co-operation between paper mills and public schools, the Abitibi Power and Paper Co., at that very time was entertaining the school teachers of Ontario. Helpful programs were distributed and, after a trip through the mill, an instructive lecture on the Manufacture of Pulp and Paper was given. The example should be followed by others.

It is significant that 80 per cent of the area burned over by forest fires in New Brunswick this year had been previously burned. That indicates an unfortunate disregard for the future, since such a fire will have destroyed the young growth that has just got a good start, as well as most of the seed remaining in the soil, and will not only retard the reforestation of such areas, but induce the growth of less desirable species.

The Laurentide Company has issued an excellent report for the year ending June 30. It is Canada's Old Faithful; happily, several other large companies are now in the class of consistent performers.

The whole American people and every lover of a wonderful tree owes a debt to the National Geographic Society for assisting in the purchase of the area containing the Sequoia, the giant trees of California. The ownership and enjoyment of the biggest trees in the world are thus preserved to the people.

The Pulp and Paper Magazine can deliver promptly, Cross & Bevan's standard textbook on Papermaking at $10, and Hobart's excellent practical book on Millwrighting at $4.75.

A COMPREHENSIVE TEXT BOOK.

This is the title given to the review by Sindall & Bacon in the August number of the Paper Makers Monthly Journal of the Text Book in preparation by the Industry. The review covers volume 2 of the series. Messrs. Sindall & Bacon point out that there are unavoidable disadvantages to a discussion of such large subjects as Mechanics, Hydraulics, Electricity and Chemistry in such small compass and predict that the presentation of the subjects as given will inspire the student to further reading.

With regard to the Chemistry they say: "Here again the matter has been presented for the benefit of students who know little or nothing of the elements of the science and the interest of the students is maintained by frequent references to the application of theoretical chemistry to problems which occur in the mill."

The review concludes: "We recommend the purchase of this book by students who desire to master all the elements of scientific application, since a careful perusal and understanding of the subject matter should inevitably inspire the reader to seek further information by going deeper into the whole question and in this sense the volumes will serve not only as reference and text books but as a logical introduction to further study."

Spanish Customs Tariff

In view of Canada's ever-increasing exports of pulp and paper, the following list of duties, quoted from the Supplement to the Board of Trade Journal for July 28, will be of interest.

In the proposed new Import Tariff the projected rates under both the "First" and "Second" Tariffs are shown. In this connection, it is desired to explain that, in virtue of an Exchange of Notes between the Spanish and British Governments of 1894, products and manufactures of the United Kingdom are entitled to the application of the "Second" Tariff rates on importation into Spain, together with any reductions of those rates which may be granted by Spain, by Treaty, to other European States, with the exception only of such special Tariff concession as Spain may accord in favour of goods of Portuguese origin. Products and manufactures of other parts of the British Empire are entitled to similar treatment on importation into Spain, with the exception only of the Commonwealth of Australia, which has withdrawn from the Arrangement of 1894. The Arrangement in question can only be terminated by one of the Parties giving six months' notice of denunciation, to the other, and such notice has not yet been given by either the Spanish Government or the British Government. The practical effect of the Arrangement is to guarantee British products and manufactures against differential Tariff treatment in Spain.

The existing rates of duty are these set out in the Provisional Customs Tariff which took effect on the 21st May last, as modified in a few details by a Royal Order dated 3rd June. In the new Draft Import Tariff the classification of merchandise for Customs purposes has been greatly elaborated, there being 1425 separate headings in the proposed Tariff as compared with 718 in the existing Tariff.

In accordance with a Law of 1906, the Spanish Customs duties are fixed on a gold basis. Gold coins of countries constituting the Latin Union, as also of the United Kingdom and the United States of America, are accepted by the Customs at legal parity. Silver coins of Spanish currency and notes of the Bank of Spain are also accepted in payment of duty; but when duty is so paid, the amount due is subject to a percentage surcharge which, under the existing system, is fixed monthly, in advance, on the basis of the average quotation of fine bar gold in London and the average sight rate of exchange of the pound sterling on London in the Madrid Exchange during the preceding month. For the present month (July) this surcharge, or gold "agia" is 46.84 per cent. The surcharge, fixed month by month, is regularly notified in the "Board of Trade Journal."

CLASS VII.—PAPER AND MANUFACTURES THEREOF.

Group I.—Raw Materials. *

Wood pulp	1st pes. c.	2nd pes. c.
Mechanical (1)	1 50	0 50
Chemical (cellulose) (1)	1 80	0 00
Clippings of paper, cardboard, rope, twine, etc.: waste paper, and fibrous material in fragments	0 25	0 10
Old rags of vegetable fibres for making paper pulp (2)	0 45	0 15
Group II.—Paper unmanufactured (en rama) (3)		
Endless paper for printing or wrapping, not cut (4).		
White or colored, glazed or not, weighing per square metre:		
Up to 20 grams inclusive	150 00	60 00
From 21 to 45 grams, containing mechanical wood pulp (5)	120 00	40 00
46 grams and upwards, containing mechanical wood pulp (5)	90 00	30 00
From 21 to 45 grams, without mechanical wood pulp (5)	125 00	50 00
More than 45 grams, without mechanical wood pulp (5)	113 00	45 00
Unsized (6):		
Polished (*alisado*) or glazed, weighing from 46 to 61 grams per square metre, in rolls and containing more than 60 per cent. of mechanical wood pulp, in sheets (5)	25 00	8 50
Polished (*alisado*) or glazed, weighing from 40 to 61 grams per square metre, containing more than 60 per cent. of mechanical wood pulp, in sheets (5)	50 00	10 00
Paper in sheets or reels, weighing 61 grams and upwards per square metre, and containing more than 60 per cent. of mechanical wood pulp (5)	90 00	18 00
Of any weight or color, without mechanical wood pulp, and with water marks (5 and 9)	163 00	65 00
Of the natural color of the pulp, not bleached nor glazed, weighing per square metre:		
Less than 20 grams; or paper for wrapping fruit	90 00	36 00
20 grams or more, unsuitable for writing or printing; or common packing paper such as straw paper, cap paper, and coarse brown paper	60 00	20 00
Paper on rolls (*semi-ordinario*), suitable for packing, colored (except white and *ahuesado*), satined or not, weighing 65 grams and upwards per square metre, and containing mechanical wood pulp	105 00	35 00
Other manufactured paper not specified in the Tariff	169 00	60 00
Group III.—Manufactures of Paper (7).		
Paper:		
White or colored, cut, of any weight	210 00	70 00
Primed with gelatine or so called linen paper or deckle edge paper (*papel de barba*) made by hand or machine, and primed after manufacture (8)	195 00	65 00
Made with the Diana or like apparatus, the pulp containing special or fancy coloring (8)	150 00	60 00
Parchmented	135 00	54 00
Paraffined	120 00	40 00

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* Duties on Raw Materials are figured on **gross weight.** All duties are calculated per 100 kilograms, except where marked "kilog.", when 1 kilogram is the unit.

With designs dry stamped, or imitations of edgings or lace (9)	3 00	0 90
Simply tarred	200 00	40 00
Tarred and reinforced on the inside or outside with thin fabric of cotton, jute or similar textile	180 00	60 00
Not tarred and reinforced with fabrics of any kind	200 00	70 00
Parchment, or paper prepared from cellulose acted on by sulphuric acid and afterwards washed with basic products, crystal and glass like (*vitron*) paper	163 00	65 00
Coated on one or both sides with a mineral material, dull or polished	163 00	65 00
Covered with thin sheets (*hojuela*) of wood	330 00	60 00
Covered with a sheet (*lamina*) of metal or with metal powder or by galvanic processes	156 00	52 00
Paper and cardboard albumenised or coated with any substance whatever for photography:		
Sensitised	4 00	1 25
Not sensitised	3 00	0 75
Wall paper in rolls:		
Printed on a natural back ground	135 00	45 00
Printed on a dull or shiny back ground	225 00	75 00
Embossed with gold, silver, wool, crystal and similar materials	360 00	120 00
Cut up, cut out into flowers, crimped in the shape of lanterns, lamp shades, and other similar manufactures	3 00	0 90
Spun	3 00	1 00
Woven paper fabrics in the piece	5 00	1 50
Sacks and other manufactures with a basis of paper yarn or woven paper fabrics, not included in other Tariff Nos.	500 00	175 00
Cigarette paper:		
In tubes or cut into leaves for books	4 00	1 50
In packets (*librillos*)	5 00	1 75
Music paper	500 00	150 00
Cut:		
In strips less than 18 mm. in width	2 50	0 80
In rolls, from 18 to 300 mm. in width	2 10	0 70
Bags, with or without inscriptions	225 00	75 00
Paperboard (*cartulina*) (10):		
Without working or stucco		
Of a size equal to or greater than 50 x 65 cm.	125 00	50 00
Of a smaller size; and that of hand-made linen paper	163 00	65 00
Stuccoed and colored, goffered or not	160 00	80 00
Moulded into articles of any kind	200 00	100 00

Group IV.—Paper Stationery (1).

Envelopes:		
Without crests, in boxes or packets of more than 200	300 00	100 00
With crests, and those without crests when imported in boxes of less than 200	375 00	125 00
Cases and boxes of writing paper, with or without envelopes, ruled or not, put up for retail sale, with the covers printed or not:		
Without crest	360 00	120 00
With crest	450 00	150 00
Account books, letter copying books, registers, copy books, counterfoil books photograph albums, stamp albums and the like; plain, ruled or printed (2)	270 00	90 00

Group VI.—Cardboard and Cardboard Wares (13)

Cardboard:		
Not worked nor covered, in sheets of a size equal to or greater than 70 x 100 cm.	100 00	20 00
Of a smaller size, or stamped out by a single stroke of the press	90 00	30 00
Covered with paper on one or both sides:		
In sheets of 70 x 100 cm. or more	85 00	42 50
In smaller sheets	100 00	50 00
Covered or impregnated with asphalt, tar, or similar materials	45 00	15 00
Polished or burnished (drapers' board)	75 00	50 00
Stuccoed with mineral substances or covered with sheets of metal or wood	115 00	46 00
Cut out or bent, prepared for folding into boxes, with or without clamps	100 00	40 00
Cardboard boxes (14):		
Lined with fine or common paper, or without lining, and without gilt edge	150 00	50 00
Lined, with gilt edging, covered with paper, printed and with designs or ornaments of any kind	225 00	75 00
Lined or with parts made of any textile fabric	375 00	125 00
Manufactures of cardboard and papier mache not specified	360 00	120 00

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(1) This number only applies to paper pulp perforated in such a manner that it can be used for no other purpose than the manufacture of paper or pasteboard. When the pulp is not perforated, the Customs will cut the sheets, at the expense of the importer, so that it may not be utilised for any other purpose. Pulp not perforated is dutiable as common pasteboard.

(2) This number applies only to rags which are used exclusively for the manufacture of paper. Importers must prove that the said materials have been used for the manufacture of paper, by means of a certificate from the Authorities giving a bond to pay the difference between the corresponding duties, which bond will be cancelled by the Customs Administration on receipt of the certificate.

(3) Unmanufactured paper ("papel en rama") means paper which has not undergone special manipulation since its manufacture, made in one operation ("de modo continuo"), without the addition of fibres or colouring by means of special apparatus.

(4) All paper, the smallest dimensions of whose sides is more than 57 cms. in the case of paper in sheets, or whose width is more than 30 cms. in the case of paper in rolls or on bobbins, is classed as unmanufactured paper, not cut.

(5) The presence of mechanical wood pulp can be detected by means of a drop of nitric acid, which will not have any effect if the paper does not contain mechanical wood pulp. To determine the proportion of mechanical pulp, fluoroglucin is to be used. This produces a red colouring, which is darker the more mechanical pulp there is in the paper; the approximate quantity can be determined by comparison with the standard specimen, allowing a tolerance of 10 per cent from the 60 per cent.

(6) All paper which permits lines made with pen and ink on one face to penetrate to the other is considered as unsized paper.

(7) Paper which during or after its manufacture has been subjected to processes which changed its form or exterior aspect is considered as manufactured paper.

(8) In order to distinguish these papers, it is sufficient

to scrape the surface, the ink being absorbed by the pulp, owing to the lack of size.

(9) Dry-stamped designs are distinguished from water marks because the lines of the former are more defined; the latter are found to be slightly stumped (difuminadas).

(10) By paperboard ("cartulina") is understood the product obtained by sticking together two or more sheets of paper; uncut paper in reams, the weight of which exceeds 200 grams per square meter, is also considered as paperboard.

(11) Articles obtained by varying the shape of the paper, ruled or bound and packed specially for retail sale, are included under this heading.

(12) The bindings shall be dutiable separately, according to kind.

(13) The product obtained during the course of manufacture by superimposing sheets of paper in wet state, without any adherent other than pressure, is considered as cardboard. The minimum weight per square meter is 350 gms.; that of less weight being dutiable as paperboard ("cartulina").

(14) Boxes of cardboard, lined with paper, which are imported as packing for handkerchiefs, shirt-fronts, buttons, piece goods, and similar articles, are free of duty, in accordance with Disposition V.

FRASER COMPANY HAD SUCCESSFUL 1920 BUSINESS.

Profits of the Fraser Companies, Limited, for the year ended December 31, 1920, show a good increase over the previous year. Profits from operations, after depreciation of inventories, amounted to $2,157,618. Deductions of $441,356 for interest and charges on bonds and bank loans, and of $439,960 for depreciation of plant and equipment, left net profits of $1,276,301, or 12.7 per cent. available for dividends on the common stock amounting to $10,000,000.

This is the first report of the company since the issue of $2,000,000 of first mortgage six per cent. serial gold bonds a few months ago. The report indicates that about $1,500,000 was available for the payment of 6 per cent. interest on the outstanding bonds of slightly less than $2,500,000, or over 60 per cent., this comprising the whole funded indebtedness of the company.

After allowing $279,462 for government taxes covering 1919 and 1920, there would remain $1,200,000 available for bond interest, or over eight times what was required. Of these taxes $185,000 has been paid since the beginning of the present year. After deducting $200,000 for the Fraser Memorial Hospital at Fredericton and $100,000 for dividends, there remained $976,301 to be carried forward to profit and loss.

After reviewing the year and the purchase of the Dominion Pulp and Paper Company at Chatham, N.B., Alexander Fraser, president of the company, says:

"The first few months of the current year witnessed a marked cessation in demand for pulp and lumber products. As a result, your pulp mills until recently, were not in continuous operation. Orders are now being received, however, in steadily increasing volume and your pulp mills at Edmonton and Chatham are now operating satisfactorily on current business."

The marriage of Katherine Sayers, daughter of Mr. and Mrs. Rowland Ford, of Portneuf, Que., to Mr. Robert Christopher Rowley, son of Mr. and Mrs. John Rowley, Westmount, Que., took place at half-past seven o'clock on Wednesday evening, August 31, at the Church of St. John the Evangelist, Portneuf, Que. Mr. Rowley and his bride have gone down the Saguenay for their wedding trip and will reside at Shawinigan Falls, on their return.

PAPER DUMPING TAKEN UP BY A.P. & P. ASS'N.

New York, Sept. 2. Following the filing of formal complaint of dumping of foreign paper in this country by Dr. Hugh P. Baker, Secretary of the American Paper and Pulp Association, formal complaints have also been filed alleging dumping of foreign pulp by Secretary H. H. Bishop of the Pulp Manufacturers' Association, affiliated with the American Paper and Pulp Association. Unofficial advices are that there has been found to be sufficient evidence of dumping to warrant the customs authorities in requiring the filing of bonds by importers sufficient to meet any tariff that may be levied, pending further investigations by the government.

In his letter to the custom appraisers, Secretary Bishop, after quoting foreign publications to the effect that Scandinavian manufacturers must take a loss if they meet the German price of $3.00 per 100 ex-dock, U.S.A., says:

"The price mentioned in this extract is in fact, not as low as pulp has been offered in this market, and if at $3 per 100 lbs. Swedish manufacturers claim that there is a loss, then there certainly must be a greater loss at the lower prices and a condition must exist from which the Anti-Dumping Act was intended to protect American manufacturers.

"For your further information, and as a basis for such investigation as you will undoubtedly wish to make, we have before us a quotation made to one of our members which reads as follows:

100 tons strong unbleached Sulphite, imported, f.o.b. cars Baltimore, Md., 2½c per lb.

200 tons extra prime bleached sulphite, imported, f.o.b. cars New York, 4¼c. per lb.

50 tons bleached sulphite, imported f.o.b. cars New York, 4c. per lb.

100-300 tons No. 1 Kraft pulp at $2.40 per cwt., f.o.b. cars New York or Baltimore (sample enclosed).

Swedish unbleached pulp 2½ per lb. (sample enclosed).

German Mitcherlich pulp $55 per ton f.o.b. cars New York (samples enclosed).

"We also have knowledge of a sale of 1,000 tons of Scandinavian No. 1 kraft, delivery during October, November and December at $40 per ton ex-dock New York.

"This is the most aggravated case which has come to our knowledge and which you will note is not expected to arrive until October, November and December, thus affording ample time to investigate on the other side relative to market conditions."

SWEDISH PAPER MILL ISSUES BOOK IN ENGLISH.

An interesting, beautifully illustrated book of 108 pages with text in English, has recently been issued by Holmens Bruks och Fabricks Aktiebolag, which has headquarters at Norrkoping, Sweden. The mills, which turn out paper, mechanical and chemical pulp, imitation leather, and cotton yarn and cloth, are described in a brief historical sketch. There are also articles on forestry and farming projects in connection with the mills.

If people are doing their duty their duty as they see it they should go to an eye doctor.

Carelessness means Injury, sooner or later. It pays to be careful.

Wayagamack Pulp and Paper Company Ltd.

By A. R. R. JONES.

Emphatically a great Canadian enterprise is the Wayagamack Pulp and Paper Company, Ltd. of Three Rivers, Que. Indeed, the name and fame of its products are household words in the kraft paper trade not only in this country and in the United States, but also in Great Britain, France, Australia, New Zealand, South Africa and elsewhere. For it is the largest manufacturer of kraft-paper in the world.

With its large and conveniently-situated timber limits, its unexcelled facilities for getting out wood and for water transportation to its mills, and its capital railroad communications the Company's location at the junction of the St. Lawrence and St. Maurice rivers is one of the finest in the world for pulp and paper purposes. In 1910, when the concern was organized, it acquired the famous Baptist timber limits, amounting to 1121 square miles. The original owner of these was George Baptist, who established the first lumber mill on the St. Maurice Valley. In addition to the limits, it also purchased from the Baptist interests its present mill site on what was formerly called Isle de la Poterie, but is now known as Wayagamack Island. More recently, it purchased the Portneuf limits on the North shore of the St. Lawrence, amounting to 485 square miles, and the well-known Breakey property on the Gaspe Peninsula, 450 square miles in extent.

Company's Executive and Products.

Mr. C. R. Whitehead is president and general manager of the Company; Mr. Jas. W. Pyke, vice-president and chairman of the executive committee; Mr. George Henderson comptroller; Mr. E. L. Wilson, secretary, and Mr. D. L. Adams, treasurer. The employees number somewhere around 1500.

The products consist of sulphate or kraft pulp and kraft wrapping papers, glazed and unglazed. In addition to making paper for the Canadian market and exporting to the countries mentioned above, the Company also exports largely to India, China, Japan and to South American Republics. It is strongly represented in all the countries to which it exports, and in the markets of all of them its products are recognized as the standard of excellence in quality and strength.

Eleven years ago when the Company was incorporated under Dominion charter, Canada was obliged to resort entirely to importation to meet her needs in the way of kraft paper. In the interval which has since elapsed the kraft paper industry has made such phenomenal strides in this country that today she not merely supplies all her own domestic kraft paper requirements, but also does the larger portion of the British kraft paper trade, and a we have seen, exports that paper to all parts of the globe. The kraft paper that is being

Log Pile and Conveyor at the Wayagamack Pulp and Paper Company, Ltd.

turned out by Wayagamack Company is regarded by the experts as being not only equal, but actually superior, to the products of its Scandinavian competitors —which products were considered to set the standard of excellence for the rest of the world in the kraft paper industry before Wayagamack entered the field and assumed, by merit, its present pride of place.

The Plant and Equipment.

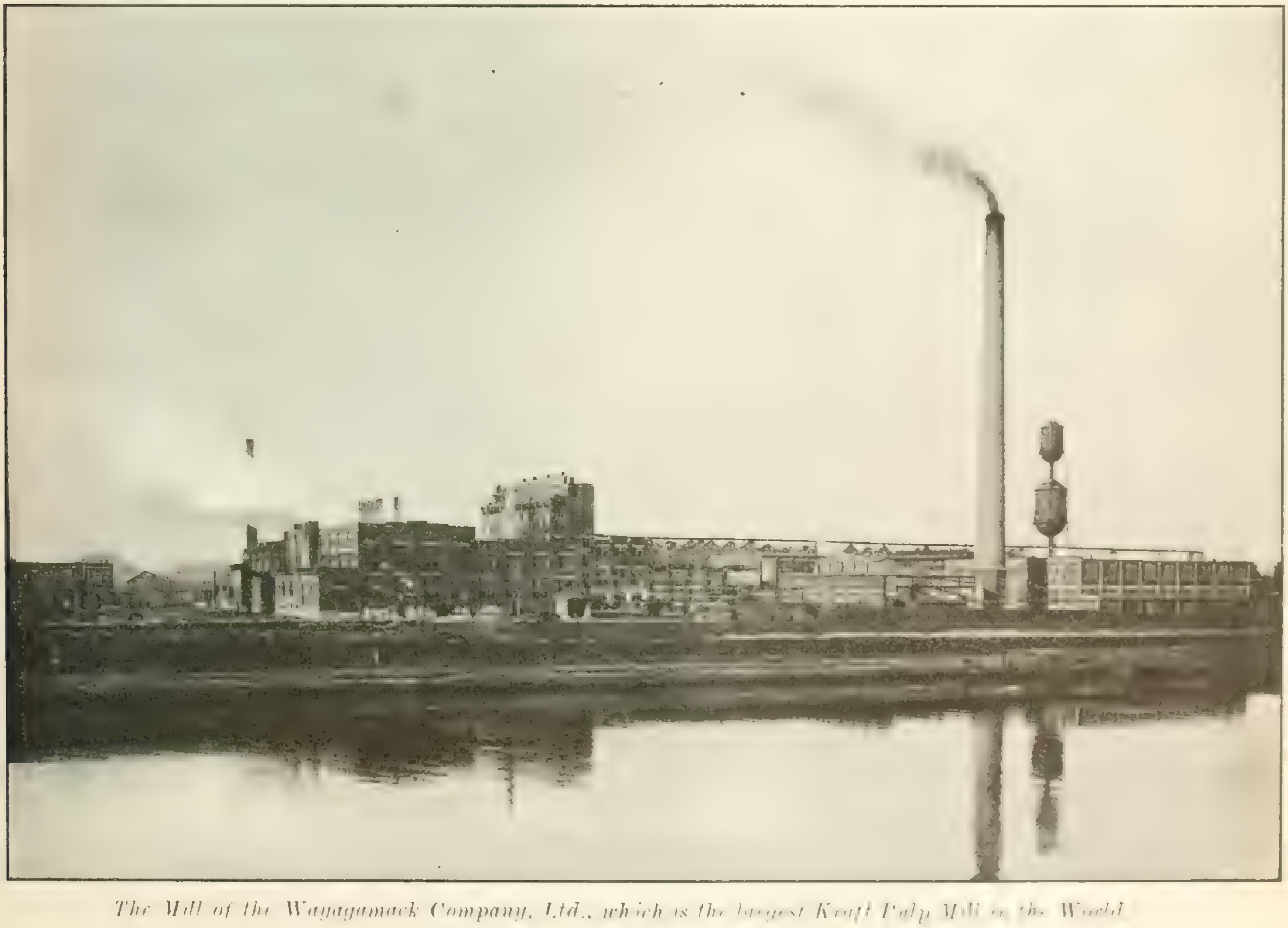
Construction of the mill was started in 1911, and in the autumn of the following year manufacturing operations were commenced. The original plant was built for a daily output of 50 tons of pulp and 50 tons of paper, but it has since been enlarged and now has a capacity of 250 tons of pulp and 150 tons of paper daily, being, as has been said, the largest kraft mill in the world.

The mill is equipped with English machinery supplied by Messrs. Bentley & Jackson, Ltd., of Bury, England, who specialize in machinery for kraft papers. In every direction of mechanical equipment, the Company has spared no effort to fit itself for every demand which may be made upon it. Nor is this true only of the mechanical side of the plant's activities. For the expert operators in the Company's employment are as highly skilled as it is posible to obtain anywhere. Indeed, the reliability of all the workers generally is a noteworthy feature of the organization, which is one of exceptional strength and harmony. The admirably coordinated activities of the management and all departments of the manufacturing and selling operations result in the wheels of the concern running with superlative smoothness. Labor is abundant and industrious and—not least important in these days—reasonable and contented.

New Grades are Being Made.

Some new grades of kraft are now being made by the Company. Until recently, it had not devoted attention to colors on a large scale, but it is now supplying a range of shades which are meeting with considerable favor. These shades include grey, green, blue, orange and maroon. The new grades include light weight papers made down to double crown 7 lbs., such as have never before been made in Canada, and, both in finish and in weight, they compare extremely favorably with anything of a similar nature made elsewhere.

Mention has been made of the large export trade done by Wayagamack. This has been built up solely by a steadfast adherence to quality of the highest. That its reputation for this quality should stand so high redounds not only to the credit of Canada but also to that of the British Empire as a whole. It is only quality that can make the impression in Great Britain which the Wayagamack products have indisputably made. For the British temperament is, other things being equal, usually disposed to think that because, in the past, a certain class of goods has not been forthcoming from a certain source, that source is unlikely, in the future, to supply that class of goods. But, only the other day, a large Manchester dealer, who had previously been disinclined to admit that Canadians could



The Mill of the Wayagamack Company, Ltd., which is the largest Kraft Pulp Mill in the World equal the Swedes in the manufacture of kraft paper, acknowledged, with reference to the Wayagamack unglazed and M. G. qualities, which had been submitted to him, that "from the general feel and look of the paper it appears to come up to the very best Scandinavian quality, and we are pleased to know that at last in our Empire we are able to compete with the foreigner."

Solely Devoted to Kraft Papers.

It is the distinction of the Wayagamack Pulp and Paper Company that, from the time it was organized right down to the present moment it has devoted, and is continuing to devote, its whole time and attention solely to the production of genuine kraft pulp and papers. Genuine kraft the word "kraft," is, in origin, a German-Scandinavian, or Swedish-German word signifying strong—was, at first, regarded simply as a wrapping paper. But today it is used not only as a wrapping paper of the highest quality, but also in the manufacture of many important articles.

A very interesting article on kraft paper by Mr. W. H. Sheriff, of the Hodge-Sherriff Paper Company, of Toronto, which acts as agents for the Wayagamack Company in Great Britain and France, and which also looks after the Company's sales in this country, was published, last month, in the Toronto Globe, and has appeared in may other publications, including the Pulp and Paper Magazine of Canada, both in this country and in the United States. In the article in question Mr. Sherriff has described many of the uses to which kraft has been put. To many people it will be a distinct surprise that it should have played a definite part in the war. Yet such is the fact. "It was," says Mr. Sherriff, "used in the manufacture of explosives and many tons of kraft were used by various Munitions Boards in Canada and the United Kingdom in the preparation of rifle cartridges. A small wad of the paper was enclosed within the thin outer covering of nickel and took the place of lead." Kraft was also used to make sand-bags. Bags of kraft can be produced at a much lower cost than jute sacks; and hence they were in great demand during the war not only at the various battle fronts, but also for the protection of buildings in England from damage by enemy aircraft.

Kraft Envelopes and Containers.

It is not so very long ago that the use of kraft envelopes was almost unknown. Today they are made and sold all over the world in hundreds of millions. Their introduction has certainly been a good move in the direction of economy for those commercial houses which have adopted them. For kraft envelopes are only about a third or a quarter the price of envelopes made from jute on cloth-lined papers, and they have been proved to be fully as satisfactory to the user.

One of the commonest purposes for which kraft is used today is as a wrapper for foodstuffs—in fact, is fast in process of becoming the recognized wrapper, waxed or oiled for foodstuffs of a greasy kind. But it is also widely used in the form of bags—as containers for tea, coffee, sugar, fruits, candies, cement, lime, lime, nails, and hardware of every description. In the article quoted, it is stated that kraft is also largely used in the manufacture of workmen's overalls and, in this form, it is, one learns with surprise, both fine and water-proof.

Protecting Cereals From Rain.

The latest and most ambitious use to which kraft has been put is as a protection for wheat and barley stooks from rain in England where inclement weather so often interferes with the process of harvesting. Kraft for this purpose is used in the form of a strong sheet of kraft in the shape of a miniature roof capable of covering a stock of ten or a dozen sheaves. When the sheaves are stooked, these covers are placed and fixed over the stooks. The latter may then be left standing in the fields almost indefinitely, so far as weather conditions are concerned for the paper not only protects them from falling rain, but also absorbs any moisture that rises from the ground, and consequently the loss of valuable grain by adverse weather conditions is reduced to a minimum.

In fact, there seems no end to the purpose for which this very remarkable product can be utilized. One has heard of paper boots and shoes—or at least boots and shoes that while pretending to be otherwise have turned out to be made partly of paper—but boots and shoes frankly made out of kraft may in the not distant future, become an accomplished and general fact. At the present time, blinds, awnings, mattings, wallpapers and chair coverings are daily being made from kraft. Twines, too, are made from this paper, and it has also been used on account of its low cost combined with its ability to withstand rain, as a substitute for canvas in tents. When one considers that less than a dozen years ago kraft paper was absolutely unknown to the great majority of people in this country, its rapid progress in popular use and favor is something at which one cannot help but marvel.

A Large Lumber Business as Well.

Mention should certainly not be omitted of the fact that, in addition to its pulp and paper mill, with the extremely large capacity noted, the Company carries on a lumber business on a very considerable scale. It has an up-to-date Waterous double cutting Bandsaw Mill, and cuts about 20,000,000 feet board measure per annum of high quality spruce and pine which is exported both to Great Britain and also to markets in the United States.

The Company's facilities for both rail and water transportation have been noticed. It remains to add that it is fortunate in the fact that it can avail itself of abundant electrical power. For it has entered into a contract with the Shawinigan Water and Power Company, whose activities have done so much to develop the industrial side of the St. Maurice Valley district, for the supply of power necessary to operate its plant for a term of forty years.

Indeed, in every respect the Wayagamack Company may be regarded as in a position of unusual strength—and not least so in the policy, in one sense sanely conservative, and, in another, decidedly and wisely progressive, for which those who guide its destinies are responsible. The outlook for the immediate future cannot, one would judge, be regarded as other than distinctly favorable. The kraft trade is steadily improving every day. It is something that prices have reached the bottom and that there will be no further recession. Moreover, the gradual trade revival which the country is anticipating will give stability to the kraft paper market. Indeed it may be a question—the writer in this matter is giving his personal view only—whether prices have not fallen too low to be fairly proportionate to the cost of manufacture. As regards the export trade with Great Britain, now that the coal dispute in that country is out of the way, and other industrial troubles are in process of being cleared up, there must, one would judge, be a considerable amount of business in kraft that is ready to be placed.

Steel Belt Power Transmission

The loss in power transmission from the engine, whether steam or electrical, to the point of application is a difficulty which has always exercised the minds of engineers wherever mechanical power is used. Experimental attempts were made in employing driving belts of metal, but after a short period of use they invariably broke when subjected to any considerable increase in load. Persistent failure always attached itself to the various connections used in joining the ends of the bands together. Subsequent experiments showed that these unsatisfactory results were attributable mainly to mistaken conceptions as to the conditions under which steel bands should be used. In calculating and constructing metal belt gearing on the occasion of previous experiments it was found that consideration was not given to the fact that the metal belt employed is subjected to a flexure constantly varying from zero to a maximum, and that to ensure durability with such a demand it was not sufficient for the belts to be calculated in the usual manner. The error consisted in not regarding the result of philosophical researches first undertaken by Wohler, according to which a tension constantly varying from zero value to a maximum and frequently applied to a body causes self destruction if the maximum tension is not confined to half the breaking stress of the material.

The present system is therefore based on the knowledge that a fracture of the belt, even with a constantly varying demand on its flexibility, can be avoided with certainty if the maximum demand likely to occur is kept so low that it does not attain half the value of the limit of fracture. Exhaustive series of trials have been carried out in England. According to the present method breaking of the belts is avoided, and the durability made unlimited by the thickness.

It was found that owing to the high modulus of elasticity of steel that it was very necessary to determine the length of a driving belt with considerable accuracy, a short extension, compelled by cutting the belt too short in the first instance, set up very serious stresses. To accomplish this purpose an ingenious device has been invented for determining the necessary length for the purpose of obtaining a truly correct working tension.

The Joint.—In the patented joint, clamping plates are shaped to suit the pulley profile, stresses at the joint are distributed evenly over the whole width, and one of the most prolific causes of fracture in the early installation is thus avoided.

The Material.—The Material used is a carefully hardened charcoal steel, prepared by a secret process, rough rolled at a red heat, and then brought to 0.2 to 0.9 mm. thickness and 12 to 200 mm. in width by cold working. The tensile strength of the finished material is about 95 tons to the square inch. The edges are rounded and finely finished, so enabling the belt to be safely handled even when running at high velocity. The elasticity remains unimpaired with use.

Friction Covering on Pulleys.—So that metal does not run to metal and to prevent any possible slip, a friction coating consisting of a layer of canvas, to which is glued fine sheets of cork, is placed over the pulley rim, and to avoid stripping under variable load, the pulley rim is first serrated by a rough file or chisel cuts. A special cement is available for use in very damp situations.

Conversion from Rope Driving.—Steel belts have to a great extent replaced cotton rope drives in a number of important applications. The simplicity of the conversion is such that the conversion of a complete rope race can be undertaken on a Saturday noon and be completed with the steel belts ready for running the following Monday morning. The conversion usually increases the horse power available at the driven shaft by 7 to 25 per cent., this being the result of a number of tests in actual installations. Over 250,000 H.P. of cotton rope drives have been already converted to steel belt transmission. Where space is cramped and drives are running to various floors, steel driving belts will solve many difficulties of the architect and millwright.

The requirements necessary to the successful employment of steel belt transmission are simple, but nevertheless important, and given suitable conditions, the results are definite and certain. When it is understood that steel belts must run perfectly true on to the pulleys, the tension to remain exactly as when fitted, the conditions demanded will be easily comprehended. The shafts, bearings and fixings must be of a solid construction, strong enough to transmit the maximum load demanded. The shafts must also be parallel, and the pulleys running true and without vibration.

Power for power, the steel belt is only one-third the width of an equivalent leather belt, the use of specially narrow and correspondingly stronger pulleys enables considerable saving in weight to be made, particularly in large diameters, at the same time reducing considerably the cost.

It should be clearly understood that the steel belt is only part of what actually is a highly scientific system of power transmission. As already explained, the process of preparing the steel and the mounting of the belts is carried out on highly scientific lines.

Safeguards.—With ordinary care steel belts are safer in use than leather or ropes. In case of fracture the belts will not fly, but fall between the shafts. The edges are rounded, and can be handled whilst running. In every country where used they are placed under precisely the same laws and regulations as applied to ropes or leather belts.

1.—An efficiency in power delivery of 99—99½ per cent.

2.—Great steadiness; a necessity for electrical machinery, textile purposes, paper mills, etc.

3.—A perpendicular drive is no disadvantage for steel belt driving.

4.—Absence of stretching. A steel belt does not stretch by use, as has been seen by eight years' experience.

5.—Even running, free from slip. As there is no actual measurable slip, it follows that transmission by steel belts is uniform and invariable.

6.—Narrower width. A steel belt is only about one-third as broad as a corresponding leather belt, consequently the pulleys will not cost so much.

7.—Great power under present conditions. In cases where the pulleys are limited in size it is often possible to get an increased power transmitted by the use of steel belts without any re-arrangement. For example, a firm had a main drive fitted with ropes capable of transmitting 150 H.P. using all the grooves. Desiring to increase the power to 250 H.P. this was accomplished by the use of one 8-in. steel belt which occupied only one-third of the width of the rope pulley, thus saving the expense of a new rope drive. Many such examples could be given.

8.—Cool bearings: Owing to the exact calculations of the necessary tension for each particular drive together with the great reduction in the weight of steel belt as against an equivalent power and weight in ropes or leather; there is a minimum of strain on the bearings, which consequently run cooler.

9.—Cleanliness. No messy dressings are required.

10.—Durability. Steel driving belts have now been in operation for eight years, and tests made of the belts first fitted show no signs of deterioration whatever. It seems evident therefore that the life of the steel belt is unlimited.

Breakages.—Where the conditions are in accordance with the requirements, it is only in very isolated instances in which a fracture occurs. These instances are invariably due to a flaw in the material itself and will show within the first eight weeks of running; by this is meant that if a steel belt runs for eight weeks it is a practical certainty that it is free from flaw and will run indefinitely. To cover any stoppage caused by a faulty belt, the manufacturers will, if requested, supply with every drive a duplicate or reserve belt, measured and ready for immediate fitting, which is left with the customer.

Steel belts vary in width from 2½ in. to 10 in. and thickness 0.4 to 1.0 mm.

Cost.—Including pulleys, drives of steel belts are less expensive than drives of leather belts or cotton rope. Exclusive of pulleys, steel belts are considerably cheaper than leather belts and slightly more expensive than cotton ropes.

As these steel belt drives are designed from scientific formula, that accurate information be given to the representatives of the manufacturers of the steel belts is absolutely essential.

The conditions necessary for steel belt transmission is more exacting than those required by ropes or leather belts,

The well known Messrs. Jones & Glassco, Reg'd. of Montreal, Power Transmission Specialists, have secured the selling rights for steel belts in Canada. They have made an exhaustive study of this subject.

Messrs. Jones & Glassco advise having inspected steel belt drives in operation in England where there are over 50,000 H.P. varying from 20 to over 800 H.P. drives in successful operation. Also they advise having received testimonials from a large number of users, all of which evidence the greatest satisfaction with steel belts, many of whom have had these steel belt drives in operation over eight years.

As steel belts may be supplied in multiples, there is no limit to the possible power to be transmitted.

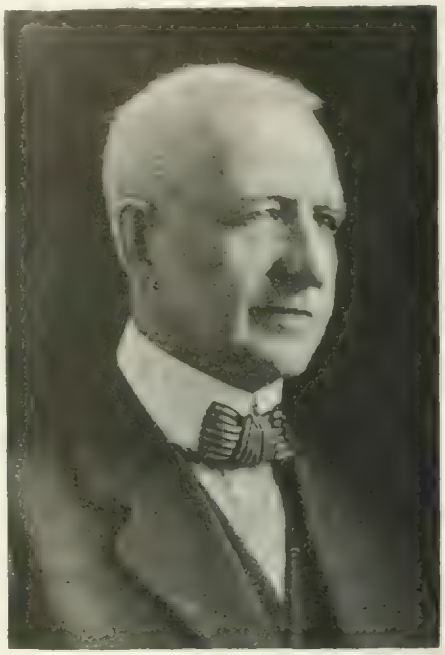
TOO BUSY TO READ.

"An hour with a book would have brought to his mind
The secret that took him a whole year to find.
The facts that he learned at enormous expense
Were all on a library shelf to commence.
Alas! for our hero; too busy to read;
He was also too busy, it proved, to succeed.
"We may win without credit or backing or style
We may win without energy, skill or a smile,
Without patience or aptitude, purpose or wit —
We may even succeed if we're lacking in grit;
But take it from me as a mighty safe hint —
A civilized man cannot win without print!"—Ex.

The world looks not at your faith but at the kind of life your faith causes you to live.

CLARKE BROS. MERGER.

At the annual general meeting of Clarke Brothers, Ltd., held at Bear River, N.S., on the 1st instant, the proposal to amalgamate with Bear River Pulp and Paper Co., a subsidiary, was unanimously approved and, at a special general meeting immediately following, a by-law authorizing an issue of $2,000,000 seven per cent. eighteen-year bonds, mainly for refunding purposes, was adopted. The following officers were elected: Mr. W. S. Clarke, Chairman and Treasurer; Mr. W. W. Clarke, Secretary; F. W. Fraser, St. John, Charles T. Stark, Toronto, Harry L. Stark, Toronto, Alexander Fasken, Toronto, and A. G. MacIntyre, Bear River, Directors.



MR. W G. CLARKE.
Chairman, Clarke Bros., Ltd., Sulphate Pulp Manufacturers.
Bear River, N. S.

NEW U. S. MILLS PROJECTED.

"The Fourth Estate" understands that a very carefully considered newsprint mill, designed to be classed among the big ones, located in the Northwest of the United States, ready for financing when the war broke out, and since that time held in abeyance, may be expected to begin construction, in the relatively near future, as it is understood that its financing has recently been completed.

It is understood that the great Pacific shipping magnate, Robert Dollar, has perfected his plans to build a newsprint mill in Philadelphia, which will be served with groundwood and sulphite from Pacific coast mills, these supplies being handled by the Dollar freight ships through the Panama Canal; all of which means that there is added newsprint tonnage in sight from mills operating in the United States.

There is also reason to believe that the project considered by Mr. Jeffries of the Birmingham Age-Herald, to manufacture newsprint from Alabama spruce pine, which is said to be available in the northern part of Alabama, will soon be under way.

Life does not hold enough of years in which we can repay a mother's love but do your best before she goes away.

THE FIRE SEASON IN NEW BRUNSWICK.

Weather statistics recorded by the Federal Stations in New Brunswick show the present fire season to have been the driest for over half a century. Periods of from six to twenty-five days occurred without any rainfall, not even showers, with the precipitation from 30 to 70 per cent below the average for the various stations during the months of May, June and July. This condition coupled with drying winds and extremely hot weather not only dried out the field crops but made conditions in the forest the most hazardous for fires on record, and rendered fire fighting very difficult on account of the lack of water in the swamps and brooks and the very dry condition of the soil.

Statistics for the fire season have not been completely compiled at the time of writing, and may reveal some changes upon closer investigation. About 300 fires have been reported, of which 200 required extra crews of men to extinguish. About 60,000 acres were burned over, 80 per cent of which was previously burned over land. Forty per cent of the area burned was privately owned land. The cost of extinguishing is in excess of previous years. The most serious day of the year was on August 6th when a very heavy windstorm swept across the southern part of the province, rendering the control of fires very difficult. Several residences at the summer resort of Westfield were burned as well as five houses at the village of Gagetown.

Causes of Fires.

Fishermen, campers, picnic parties and others in the woods were the cause of about fifty per cent of the fires. Railways caused twenty per cent, settlers fourteen per cent, while thirteen per cent are charged to miscellaneous causes. Lightning has, for the first time in the experience of the Department, caused serious fires three per cent being attributed to this cause due no doubt to the extremely dry weather and thunder storms, not followed by heavy rains. The very dry condition of the woods accounts to some extent for the large number of fires charged to camps as it was found that in several cases fires spread from campers' fires where the parties had not used precaution and put water on their fires.

Apart from the loss of property at Westfield and Gagetown the damage to standing timber has been small this year in proportion to the hazard, but the damage to future forests by the destruction of young growth is serious. Complete statistics are not yet available regarding the amount of timber burned. The damage caused from the different sources of fires is not in the same proportion as the causes. Settlers' fires caused practically no damage this year, while the damage from railways is also small. The restriction placed on all slash burning on May 10th, which prohibited the issuing of fire permits, accounts for the reduction in the number of fires and damage caused from settlers' fires.

Fall burning of slash is being agitated throughout the province. Out of the total number of fires, over half were extinguished before spreading over five acres. Over 1,000 temporary fire wardens were on the lookout for fire during the dry periods. The lookouts rendered valuable service in forest fire detection and the hearty co-operation of all the lumbermen in supplying equipment at the fires was of considerable aid in quickly organizing fire fighting crews. The co-operative wardens of the licensees and private land owners have rendered valuable service.

Forest fires may only be reduced by eliminating the causes. As stated above, the restriction on slash burning has practically reduced the danger from slash fires and the precautions taken by the railways in keeping their locomotives in condition and patrolling the right of way has materially reduced the railway fires. Fishermen and campers' fires must be controlled, and in view of the comparatively large damage and large number of fires attributable to this cause, the Department now has under consideration legislation prohibiting fishermen and others from entering the forest in the dry season without a permit from the forest ranger.

SIR WILLIAM J. POPE, K.B.E., F.R.S.
Head of distinguished British Chemists attending annual convention in Montreal and visiting Canada and the United States.

THROW IN YOUR CLUTCH.

I am inclined to think it is even more important that the distributor should keep himself in readiness for business when it comes than it is for the producer. The distributor is dependent upon his relations with the consuming public. These relations may be ever so cordial and apparently dependable; but human nature is fickle, and people soon forget you when you neglect to cultivate them. If anything, there is more need to keep in touch with a customer when he is not buying than when he is. So long as he is being regularly supplied with the goods of a certain house he is not apt to look for another source, provided the dealings are satisfactory. But when there comes a pause in activity and his business is practically suspended, he may in the interim get weaned away from his old business connections; and when he starts in again there is danger of his experimenting with new people. If a salesman is worth while, he may render a valuable service to his employer when times are dull, even if he does nothing more than keep up a business acquaintance with his old customers. —Judge Moore, in the United States Paper Maker.

The basis of business is confidence and the basis of confidence is understanding.—Mason's Monthly.

They call it a monarchy, but it is King George the Fifth and Lloyd George the Four-Fifths.

Technical Section

REVIEW OF RECENT LITERATURE

A-1. Analysis of Wood. Svensk Pappers-Tidning, 6, 1921. The author describes the Kramfors methods of determining resin and cellulose in wood. P. B.

A-14. Analysis of Mineral Matter of Paper. J. SCOTT, **Paper Maker and British Paper Trade Journal,** lxi, 4. Describes the processes of testing samples of paper with the object of ascertaining the nature of the various loading materials contained in it.—A. C.

A-15. Analysis of Moisture in Pulp for England. Svensk Pappers-Tidning, 23, 1920. Complaint is made that Swedish and Finnish pulps are deficient in dryness. Estimation of the moisture content by the method of SINDALL and BACON, or the British official tests, is liable to errors of various kinds, caused in a measure by the nature of cellulose and the absorption of moisture in transit. Moreover the sample taken may not be a good average specimen of the shipment, and consequently of the cellulose as a whole. Cellulose, too, is of variable character. Competent inspection, sampling, and testing are the only means of arriving at the moisture content and a standard method of testing.—P. B.

A-15. Hydrolysis of Cellulose. Finsk Pappers-Och Travarutidskrift, 7 (September 15), 1920. ghe formula of cellulose is as yet unknown, though it may be shown that it is an aldehyde of glucose. The formula has the following characters: (1) Its highest nitration point is nitrocellulose with six atoms of carbon; (2) its highest acetyl derivative is a triacetic acid ester; (3) with strong alkalies in solution cellulose forms a sodium compound, which is decomposed by water, whereby cellulose is hydrolyzed—in this form cellulose is readily soluble in zinc oxide and alkaline cuprammonium oxide; (4) if the sodium compounds of cellulose are treated with carbonaceous sulphur, cellulose thiocarbonate is formed, which is readily soluble in water; the thiocarbonate is very unstable and is decomposed by acids, acid salts or ammonium chloride, whereby cellulose is simultaneously hydrolyzed; (5) cellulose does not react with phenylhydrazin or hydroxylamin, whence it follows that a CO-group is excluded, that is, no aldehyde or ketone group is taken up; on the other hand one can easily form a hydrolyzed product in which a CO-group occurs; (6) the end product of the hydrolysis of cellulose, with sulphuric acid, for example, is glucose; (7) from cellulose when treated with halogens in ether or chloroform solution, is obtained w-chlormethylfurfural or brommethylfurfural; (8) if cellulose is oxidized, oxycellulose is formed, which has a distinctly acid character and when distilled with dilute HCl gives furfural. Cellulose hydrate is obtained by mechanical separation of cellulose in water and drying at ordinary temperature; by the action of salt solution; by the action of alkalies; precipitation of cellulose from solutions; precipitation of cellulose esters; and by the action of acids. The molecular structure of cellulose hydrate is unknown. Hydrocellulose is likewise obtained by treating cellulose with acids. Like cellulose it is fibrous. Finally, as mentioned before, oxycellulose is formed by oxidizing substance.—P. B.

A-15. Acetolytic Decomposition Products of Cellulose. R. PROSIEGEL, **Zellstoffchem. Abhandl.,** i, 1 (June 15, 1920); **Paper,** xxviii, 7 (April 20, 1921). An extensive investigation into the intermediate products of decomposition of cellulose by acetolysis—dextrin acetates and cellodextrins. Translation by Clarence J. West.—A. P.-C.

B-4. Jack Pine for Paper. World's Paper Trade Review, lxxv, 18. In the House of Commons at Ottawa, Hume Cronyn mentioned that a pulp mill had found means of using Jack pine for the manufacture of paper. —A. C.

B-9. Source of Pulpwood in Japan. World's Paper Trade Review, lxxv, 18. There are vast forests in Karafut where two kinds of timber grow that are suitable for pulp. The supply is said to be inexhaustible. Five pulp mills have already been established and five more are projected. In the near future it is estimated that 100,000 tons of pulp will be produced annually.— A. C.

B-9. Prodigal Use of Forests in America. WILLIAM SCHACK. **Paper Maker and British Paper Trade Journal,** lxi, 4. An article on the prodigal way in which America has used her forests and a summary of the "Snell bill."—A. C.

B-0.; N-7. Rainfall Statistics. KENNETH ALLEN, **Engineering News Record,** lxxxvi, 14. A study based on records at Central Park, New York, for fifty-one years.—A. C.

D-4. Voith's Magazine Grinder. Tidsskrift for Papirindustri, 6 (April 15) 1921; **Pappen-und Holzstoff-Zeitung,** xii, 1921. Magazine grinders produce an even pulp without large slivers. Their advantages are: saving of labor, one attendant being sufficient; skilled labor is not required; the wood is warmed by the action of the stones; economy or horsepower.— P. B.

E-1. Analysis of Sulphite Cooking Acid. Svensk Pappers-Tidning, 21 (Nov. 15) 1920. The results of titration can vary within considerable limits. The carbonic acid values found by Oman, using the alkalimetric method, are too high, and he ascribes too great an influence to this substance. Klason, who took an opposite view, has shown, by employing the method of Henry-Dalton that the crude SO$_2$ can actually contain no more than approximately 0.001 percent carbonic acid. Similarly, employing the methods of Winkler and Hohn, Klason obtained constant results. Oman, also, found low values for lime, using the alkalimetric method, while Thorbjornsson with Winkler's method found them 5 to 6 percent to high. The causes of these differences, in his opinion, is the splitting-off of sodium sulphite by hydrolysis during titration. "This explanation is likewise not exactly right." It can easily be shown that the solution in which titration is carried out, is about 1/200 normal Na$_2$ SO$_3$, because to this solution is added 1 Cc. of the original acid with about 1.60 percent of free acid in 100 Cc. of water. In such dilution dissociation by sulphurous acid cannot lead to an increased hydrolysis of salts. As a matter of fact the relatively weak dissociation of free acid produces a degree of hydrolysis amounting to about 0.00015 to

0.0003 per cent. Moreover in nearly all mills, without exception, the alkalimetric method gives free acid values that are from 5 to 15 per cent too high. This is true of the raw acid as manufactured by the tower system or by the American Bottich process. The errors introduced by the presence of carbonic acid may best be avoided by employing the newer methods of Streeb and A. Sander and the "modified" Hohn method (Methyl orange and paranitrophenol as indicators). P. B.

E-2. Sulphite Spirit as Motor Fuel. Papir-Journalen, viii, 14 (August 14), 1920. Previous attempts to use mixtures of sulphite spirit and benzol had not been without injury to machinery. Professor Hubendick has written a report on new methods of application, the result of which has demonstrated the practical value of this fuel.—P. B.

G-11; N-7. Water Wheels and Save-Alls. Zentralblatt fur die Papierindustrie, xxxix (April 1) 1921. The author analyzes and compares the merits and demerits of the hydraulic wheel and turbine, preferring the former despite its many defects. Much economy lies in the new types of save-alls.—P. B.

K-12 Automatic Control for Sectional Paper Machine Drive. STEPHEN A. STAEGE, **Pulp and Paper,** xix (June 2, 1921). See **Paper,** xxvi (April 21, 1920); **Pulp and Paper,** xviii (June 10, 1920; 1145 (Nov. 4, 1920).—A. P.-C.

K-15. Newsprint Manufacture in Canada. Papir-Journalen, ix, 5 (April 9), 1921. A Scandinavian engineer, K. MAARTMANN MOE, makes a detailed comparison between the Canadian and Scandinavian newsprint mills and grinders. The Canadian mills are worked with less machinery and require consequently less power than the Scandinavian. Under the system in use in Norway and Sweden, however, the groundwood mills are operated more cheaply.—P. B.

K-16. Reenforced Wrapping Paper. A. LAMBRETTE. **Papeterie,** xliii (May 10, 1921).- Brief description of the machine for making asphalt coated or asphalt duplexed wrapping paper reenforced by means of a fabric having an open weave.—A. P.-C.

K-22. Cigarette Papers. LOUIS SCHWEITZER, **World's Paper Trade Review, lxxv, 21.** Reproduction of an article in **Paper** describing the properties necessary in cigarette papers and some characteristics in manufacture.—A. C.

K-23. Blotting and Filter Paper. World's Paper Trade Review, lxxv, 21. An article describing the properties and characteristics of blotting and filter papers and ways of developing and improving the desired properties.—A. C.

K-23. Waterproof Paper. Paper Container, iv, 6. An extract from the bulletin issued by the executive committee of the Australian Advisory Council of Science and Industry dealing with the proofing of board and containers made from board.—A. C.

K-0. Standardization of Paper. W. H. HAZELL. **World's Paper Trade Review,** lxxv, 22. The present methods of dealing with paper are deemed unsuitable and changes are suggested in the methods now used as regards standards. The main points on which international standards could be fixed are (a) standard unit for sale; (b) standard thickness of paper; (c) uniform methods of packing; (d) uniform customs of the trade; (e) standard sizes.—A. C.

K-0. Cooperation in Paper Standardization. World's Paper Trade Review, lxxii, 22. Review of American Knitting Paper Company's "board sheet" announcement that seven national associations in the United States connected with the paper and printing trade are cooperating in the standardization of paper and printing.—A. C.

L-4. Manufacture of Paper Containers. Paper Container, iv, 6. The eighteenth article of a series on the manufacture of paper containers, dealing with the spirally wound tube of the round box or container.—A. C.

L-4. Corrugated Boxes. Paper Container, iv, 6. Extracts from a booklet issued by the National Association of Corrugated Fiber Box Manufacturers, which deals with the advisability of having standard names for the various kinds of corrugated fiber boxes.—A. C.

M-0. Containers for Viscous Substances. Paper Container, iv, 6.. The container is provided with a lip or scoop adapted to scoop up the contents on the rotation of the disk, the object of the invention being to provide means for covering the said lip or scoop.—A. C.

N-6. Steam Turbines in the Paper Mill. Paper Maker and British Paper Trade Journal, lxi, 4.. A paper by A. G. GROUNDWATER read at a recent meeting of the Aberdeen branch of the Technical Section of the Paper Makers' Association.—A. C.

N-7. Interstate Water Conflicts and Possible Solution. Engineering News Record, lxxxvi, 18. A discussion by representative engineers on the suggestion by R. I. MEEKER, in **Engineering News Record,** Jan. 27, p. 157, for interstate cooperation to avoid conflicts over water rights and also to further the more complete utilization of United States' water resources.—A. C.

N-0. Electric Steam Generation for Industrial Purposes. Paper Maker and British Paper Trade Journal, lxi, 4. Describes the uses of an electric steam generator in the chemical, textile and papermaking industries.—A. C.

Q-0. Hydraulic Fill Practice. JOHN E. FIELD, **Engineering News Record,** lxxxvi, 14. Details of construction of earth-fill dam, and showing how studies of flume lining place cast-iron plates first and green spruce blocks second in durability.—A. C.

R-5. Paper Pulp Supplies from India. WILLIAM RAITT, **World's Paper Trade Review,** lxxv, 19. A paper read before the Royal Society of Arts.—A. C.

R-13. American Paper and Pulp Association's Annual Meeting—Paper, xxviii, 7; **Paper Trade Journal,** lxxii, 16; **Paper Mill,** xliv, 16.—Account of the convention held in New York, April 14, 1921, including retiring president Sissons' address, Secretary Baker's report, resolutions passed at the general meeting, report of the tariff committee, report on industrial relations, and address of President S. L. Bush of the Cost Association of the Paper Industry.—A. P. C.

R-13. British Paper Makers' Association Meeting. Pulp and Paper, xix (May 12, 1921). Brief account of the meeting held in London in April, 1921.—A. P.-C.

R-0. Checking Industrial Waste. HERBERT HOOVER, Secretary of Commerce, **Paper,** xxviii, 6 (April 13, 1921). Waste in production is due to unemployment, lost time caused by labor conflicts, losses in labor turnover, failure to secure the maximum production of the individual (either from misfit or lack of interest) poor coordination of great industries, failure in transportation, coal and power supplies, lack of standardization, speculation, mismanagement, inefficient national equipment, etc.—A. P.-C.

PULP AND PAPER NEWS

Announcement was made last week of an important change in the management of the Whalen Pulp and Paper Company, Ltd. For several years past the Reliance Mill and Trading Company, a United States concern, has been in charge of production for the Whalen Pulp and Paper Company, but this arrangement has now terminated, and the Reliance has withdrawn from the operating management. The president of Whalen concern, the Hon. T. W. McGarry, formerly Provincial Treasurer for Ontario, has been in Vancouver in connection with the Company's affairs, with the object, it is understood, of arranging for the appointment of a staff to carry on operations. The Company's Woodfibre plant has been reopened, employing about 300 men.

A meeting of men prominent in the paper industry was held in Montreal last week. It is said that one of the matters under discussion thereat was the price of newsprint for the last quarter of the current year.

On the 31st August, a fire at Thunder Bay, Ont., destroyed the hardwood mill, boarding house, blacksmith's shop, oil houses, garage and docks of George Mason and Company. More than 600,000 feet of hardwood lumber, 1500 cords of hardwood slabs, several hundred thousand hardwood broom handles, and one barge, with its load of lumber, were also destroyed. The bulk of the stock was owned by George Mason and Company. Others interested in it are the Black Rock Lumber Company, of Buffalo, Huntington and Finke, of Buffalo, Walter N. Kelly, of Detroit, and Manley Chew, of Midland, Ont. As there is somewhere around six years' cut of hardwood lumber on the Christian, Hope and Beckwith Islands, near where the mill was situated, it is probable that Mason and Company will rebuild, but in the meantime seventy men have been thrown out of work.

A party, consisting of some two hundred school teachers of Ontario, has been touring Ontario's Northlands, and in the course of the tour, visiting the Abitibi Company's plant at Iroquois Falls, and other pulp and paper mills in that section of the country. Visits of this kind are invaluable as giving to the teachers, and, through them, to the children of the Province, a more adequate idea than is generally evinced both of the natural resources of Ontario and the importance of the pulp and paper industry in the industrial life of the Dominion.

The striking printers, after a meeting in the Toronto Labor Temple, last week, prayed for success in their fight for the forty-four hour week. The suggestion was made by a member that the printers might gain by prayer the results which they have so far failed to secure, and, following the meeting called for the transaction of business, a number of the strikers proceeded to one of the smaller rooms in the Labor Temple and engaged in a prayer meeting. It is certainly the first time in the history of the Toronto Labor Temple that a Trade Union, as a body, has fallen to prayer within its walls in the course of a dispute with the employers. The cynical profess to see in the incident an attempt to beat the Methodist Bookroom, which is the protagonist on the side of the employers, with its own weapons.

The Detroit Sulphite Pulp and Paper Company has been making extensive purchases of pulpwood in Ontario. This Company, a little while ago, took out an extra Provincial license enabling it to do business in the Province of Ontario, and has a yard at Fort William where it will make considerable extensions as soon as conditions are sufficiently improved to warrant them.

Sir George Foster, Minister of Trade and Commerce, has issued the following statement in regard to the appointment of Col. F. M. Gaudet as manager, and Dr. R. A. Ross as chairman, of the Honorary Advisory Council for Scientific and Industrial Research: "Formerly, we had an administrative chairman, who was a member of the board and carried on the work of the Research Council under the advice of the Council. The administrative chairman was paid a salary of $10,000 a year. Dr. McCallum having resigned from the office of administrative chairman on account of his appointment to a position in McGill University, and his subsequent mission to China, the office has since been carried on by Dr. Ruttan, of McGill University, in an honorary capacity. Dr. Ruttan finds it impossible to devote sufficient time to justify him in remaining in this position, though his services are still given as a member of the Advisory Council. The Advisory Council has, therefore, after fully considering past operations and the needs of the future, recommended that the office of paid administrative chairman be no longer continued, but that a technical expert and man of business experience shall be appointed to carry on the practical work of the Council, and be paid a sufficient salary therefor, the salary of administrative chairman to be abolished. The recommendation of the Council was approved and arrangements are under way to carry out the same, Col. Gaudet has been selected as technical expert and manager for a period of one year, and Dr. R. A. Ross, of Montreal, has been selected as chairman of the Advisory Council without salary."

Mr. J. O. Chenevert, of the Wayagamack Pulp and Paper Co. has left for Vancouver whence he sails on the Empress of Russia on the 15th for a 5 months tour, which will include Japan, China, Australia and New Zealand.

The City Council of Prince Rupert have made certain offers to the Prince Rupert Pulp and Paper Company Ltd., with regard to the supplying power for the proposed mill. The company has suggested that the acceptance or refusal of the offer be deferred for the present as the company's plans are not far enough advanced as yet to permit them to enter into such a contract.

The plant of the Alaska Pulp and Paper Company at Speel River, the only plant of its kind in Alaska at present, is closed. The management has stated that it will not be reopened until there is an improvement in market conditions as they cannot operate at a profit with pulp around $35 a ton coupled with freight rates of $12.40 a ton to Seattle.

LAURENTIDE CONTINUES TO PROSPER.

The financial statement of the Laurentide Co. is an exceptionally good one. The earnings are high, the position liquid, while a reserve of $2,000,000 has been built up as against depreciation of inventories this latter item being a point on which there has been considerable controversy on the street. Bank loans, another point of contention, have grown in the year by nearly $3,000,000, but even with this they are more than offset by the company's investments which are carried as current assets as against bank loans as current liabilities.

For th year ended June 30, 1921, net profits amounted to $4,515,929, these being available for dividends on the outstanding capital stock of $28,800,000, or equivalent to 15.66 per cent earned thereon. This compared with net earnings of $1,499,539 in the preceding six months, equal to 5.21 per cent earned on the same capitalization.

Total operating profits amounted to $6,404,395, as compared with $2,401,550 in the preceding six months and with $2,743,374 in the 1919 fiscal year. Total income was $6,724,033 against $2,566,673 in the six months and with $2,955,979 in the 1919 year.

Reserve for taxes, depreciation and depletion is $1,322,843 against $762,687 in the six months and $745,396 in the 1919 year.

After deduction of dividends of $1,728,000 and the $2,000,000 reserve against depreciation of inventories, surplus stands at $787,929 for the year.

The balance sheet reveals many things that are interesting as well as illuminating. The fiscal position has been fully maintained in its liquidity. Current assets amount to $15,958,254 against $13,431,229 a year ago, with current liabilities $8,475,634 against $5,377,761 a year ago. This indicates a surplus of current assets over current liabilities (net working capital) of $7,482,620 compared with $8,053,468 as at June 30, 1920. While the net working capital in the present statement is at a slight decrease from a year ago, the difference is not particularly marked being less than $500,000.

The bank loans item is another interesting point in the balance sheet. This item stands at $5,067,945 as compared with $2,812,859 the previous year. Against this stands investments at $5,071,855 as compared with $5,071,695 the previous year. Cash is down at $20,116 against $280,452 last year. Inventories of logs, etc., stand at $8,392,813 against $5,373,606 the previous year.

Other items in the balance sheet include: Accounts receivable $1,282,530 against $1,590,548; mill supplies, $955,876 against $981.232; merchandise, $235,065 against $203,696; net property, $25,073,602 against $21,599,846; capital stock paid up unchanged at $28,800,000; bills payable $265,883 against $204.100; accounts payable, $1,035,487 against $551.938; and business profits tax, $1,095,918 against $640,000 reported as at June 30, 1920.

George Chahoon, jr., president of the company, in his remarks to shareholders, refers very briefly to the report, and the general situation as regards the company. His remarks in full are:—

''The profits for the year ending June 30, 1921, after setting aside sufficient reserves for taxes, depreciation and depletion, were $4,515,929.

''After the payment of interest and all other charges, and dividends at the rate of six per cent, the surplus for the year was $2,787,929.

''It was thought to be a conservative policy to set aside a reserve of $2,000,000 for possible depreciation of inventories.

''The two new paper machines and other mill changes referred to in the last annual report were completed at the beginning of the present calendar year, and are operating in a satisfactory manner. The product of these machines is entirely contracted for some years to come.''

WESTERN ITEMS.

J. D. McArthur, the well-known railway contractor, of Winnipeg, representing the Manitoba Pulp and Paper Company, recently obtained a pulp concession consisting of 718 square miles of pulp and timber lands just to the east of Lake Winnipeg. Mr. McArthur stated that preliminary work on the mill would start immediately and that between 600 and 700 men would be given employment there. Under the conditions laid down the company is to construct a pulp and paper mill costing not less than $1,000,000, to be completed within three years, with a capacity of 100 tons a day. Not less than 50 per cent of the pulp is to be manufactured into paper by the mill. The government has laid down strict rules with regard to the marketing of the mill's product. If in the opinion of the minister of the interior, the domestic market requires it, a ban will be placed upon exports. The company proposes to erect a two-machine mill as a first unit.

From Portland, Oregon, recently came the announcement of the largest sale of pulp timber yet made in the U.S. National forests. The Alaskan-American Paper corporation of New York purchased what is known as the Behm Canal unit which is the Tongass national forest, Alaska, about 60 miles north of Ketchikan. The purchase includes about 100,000,000 cubic feet of spruce, hemlock and cedar. The concern intends to erect pulp mills on its property and applied for the necessary water rights. The price of the timber was 60 cents per 100 cubic feet of spruce and cedar and 30 cents for hemlock and other species.

After five months strenuous work the government officials engaged in the woods of upper Fraser river valley in estimating between 250 and 300 square miles of timber for supplying the Fraser Timber Syndicate have reached Prince George. The Fraser Timber Syndicate plans to erect a pulp and paper plant at Prince George at the cost of several million dollars. Mr. Robert Tryhurst and the principals of the company are expected to visit central B.C. in the near future when definite announcements of the company's plans are expected to be made.

QUEBEC REDUCES STUMPAGE TAXES.

Following serious consideration the Government has temporarily suspended the order-in-council of October 1920, regulating the rights of stumpage, also reducing the royalty fee, the schedule of prices for 1918 being adopted, which is nearly 50 per cent less than that of 1920. It will greatly reduce the revenue of the department of Lands and Forests, but the Government deems it preferable to suffer the loss, and give work to the thousands of wood cutters who are awaiting this decision.

Courage is just strength of heart and the strong heart makes itself felt everywhere, and lifts up the whole of life, and ennobles it, and makes it move directly to its chosen aim.—Rev. Henry Van Dyke, D.D.

UNITED STATES NOTES

Reports from various sections of the country to the American Paper and Pulp Association indicate a gradual improvement in the high-grade paper industry. Among the notable examples of resumptions in plants manufacturing the finer products are the Strathmore Paper Company, at Mittineague, Mass., which restored its machines to production September 1, and the American Writing Paper Company, which is steadily increasing its output. Following the recent and various individual downward revisions in the price of high-grade paper, liquidation is apparently complete in the writing, book and cover paper markets, and as a result buying is increasing.

A large modern manufacturing plant, put up by the Louisiana Celotex Company on the bank of the Mississippi River not far from New Orleans, is about ready for the start of operations. This plant has been built and equipped for the manufacture of an insulating board, bearing the trade name of "Celotex," which is really a "made" lumber converted by a special process from bagasse. Over a half million dollars have been put into the undertaking to date by its promoters. These are all men who have been actively engaged in the fiber and insulating industry for many years. The officers of the company are: B. G. Dahlberg, president; J. K. Shaw, vice-president; C. G. Muench, vice-president; C. F. Dahlberg, treasurer, and T. E. Dahlberg, secretary and assistant to the president.

The International Paper Company, according to Philip T. Dodge, its president, is steadily increasing its output, producing about 400 tons of paper daily. In the not distant future the company expects production to reach the figure prior to the strike. Eight mills are now operating, Mr. Dodge says, and he declares that although the company does not object to organization within the circle of its own employes, it is through with unionism and will insist on an open shop. Men have more money at the end of the year, in Mr. Dodge's opinion, on the open shop basis than they have under the closed shop with strikes and delays.

The paper trade salesmen of the New England district will gather in a conference at the Hotel Copley Plaza, Boston, next Wednesday. This meeting will be given over to a discussion of business conditions and is in line with similar trade discussion meetings being arranged for paper salesmen in all sections of the country.

An action for the recovery of damages put at $63.-000 has been instituted in the District Court at Dayton, Ohio, against the American Wood Pulp Corporation of New York by the Miami Paper Company of West Carrollton, Ohio. The plaintiff corporation charges misrepresentation in the sale of sulphite it contracted to buy and it now seeks to recover the price it paid for the material, alleging that a grade of sulphite inferior to that originally specified had been delivered. After using more than 100,000 pounds of the sulphite, the Miami company discovered, it is charged, that it had been duped "through false representation."

A further cut in newsprint for the ensuing three months by the International Paper Company is reported by Dow, Jones & Co., the financial news agency, but not confirmed by the company. The latest reduction will be $15 per ton, bringing the price down to $80 per ton. This is $50 a ton below the peak price of 1920 and is but $4.95 a ton above the price fixed by the Federal Trade Commission under government control.

An industrial community building and clubhouse that promises to be a model of its kind, is being erected at the Parchment plant of the Kalamazoo Vegetable Parchment Company. The proposed structure, in which it is intended to center the social and community activities of the town, is well situated, being immediately adjacent to the playgrounds and directly across the river road from the big paper mill and parchment plant.

Eugene F. Crowe, for years a prominent figure in the paper trade of the Empire State, died recently of heart disease while on a yatching cruise. Mr. Crow was at the head of the Perkins-Goodwin Company of New York at the time of his death. He had worked up to the presidency of this concern after thirty years of faithful and efficient service, having started at the bottom as a paper salesman. He is survived by his widow, Mrs. Grace M. Crow.

The Rex Paper Company, Kalamazoo, Mich., has maintained production at a steady gait since the beginning of the year and can boast a record of having run without a single day's shutdown since Jan. 1. There are at present orders on the company's books for a month's steady business. The business depression that has been felt by every paper mill in the Kalamazoo valley district has missed the Rex plant.

Another company in the valley district that has been doing very well is the Sutherland Paper Company. L. W. Sutherland, its president, has the following to say regarding the outlook as it affects his concern: "I can say honestly that business conditions look better with us than for months. We have had little to complain of the past two or three months and the future outlook is even brighter. I contend we are in a position to know of general conditions, as we supply cartons for so many different lines of manufacture. I predict everybody will be busy next winter and very busy next year. People who think things are going to smash had better take another look at conditions."

Several New York creditors of the Cushnoc and the Kennebec Paper Companies, both of Maine, have decided to conduct the affairs of these concerns, if the co-operation of creditors representing 90 per cent of the companies' indebtedness can be obtained before September 15. Officers for the concerns and creditors representing more than $500.000 of claims already have agreed to the arrangement. Balance sheets of the two companies are said to show a surplus of nearly $1.000, but the business depression prevents the owners from properly financing operations. Under the proposed arrangement, according to the creditors' committee, the interests of creditors would be protected and operation of the mills could be continued. Under its terms the creditors would extend the time of payment of claims and accept promissory notes, payable in six months, at 7 per cent interest.

BOOK REVIEW.

Application of Dyestuffs to Textiles, Paper, Leather, and Other Materials. J. MERRITT MATTHEWS. xvi. 768 p. 303 fig. tables, bibliography. John Wiley and Sons, Inc., 1920, $10.

The present volume has been the result of a comprehensive and more extended development of the author's earlier book entitled "Laboratory Manual of Dyeing and Textile Chemistry." It has been greatly broadened in its scope so as to appeal to the interests of all those concerned in the application of dyestuffs. The treatment is a technical one; that is to say, definite facts have been presented in a definite form. The war has created considerable chaos in the dyestuff world and as a result of the tremendous impetus in the manufacture of dyestuffs in America and in England, there has been a great readjustment in the naming of dyestuffs. In order to prevent confusion as well as the risk of recording products that may subsequently prove to be of only a temporary significance, the author has deemed it advisable to retain the names of the dyestuffs that were well known before the war and which would be easily and intelligently recognized in the industry all over the world.

In view of the fact that paper, as regards its properties with respect to dyestuffs, closely resembles cotton and the other vegetable fibres, and that paper may be dyed with basic, acid, substantive, and to a lesser extent some of the sulphur colors as well as some of the vat dyes, the book contains much of interest to the paper manufacturer. The chapters of special importance are, probably: Application of acids dyes to silk, cotton, etc.; basic dyes on cotton; Application of substantive dyes to cotton; Sulphur dyes; The vat dyes; Testing the fastness of colors: Application of dyes to various materials, Testing of dyestuffs.

Matthews, in discussing the dyeing of paper, gives the following details: "Paper may be considered as a web of fabric of interlaced vegetables fibers made by enmeshing them on a screen from a broth or suspension of these fibers in water. Paper may be dyed either in the form of pulp (which consists of a suspension of the fibers in water) previous to being converted into paper or in the form of the prepared paper. In the former case the pulp is contained in a mixing tank or beater and the dyestuff solutions and other necessary ingredients are added directly to the pulp and thoroughly incorporated with it by mixing. The dye is either taken up directly by the fiber or is precipitated in and on the fiber by suitable mordants. In the case of dyeing the prepared paper itself the latter in open width is run through a solution of the dyestuffs, which it takes up either by combination with the fiber or by simple absorption and becomes dyed thereby. In some cases where the paper is heavily coated and dyed on one side only the coloring matter in the form of a proper paste or solution is brushed on the surface of the paper or applied by means of rollers, in which case it is more of a painting operation than a real dyeing one.

"The dyes that are principally used for the coloring of paper are the basic, acid, substantive, and to a lesser extent some of the sulphur colors as well as some of the vat dyes, where the production of colors or tints of great fastness to light is desired.

"Paper pulp is dyed in the beater with the basic dyes in the following manner: There is first added to the pulp in the beater 3 to 4 per cent aluminum sulphate dissolved in water and the beater is allowed to run for ten minutes; then add the solution of the basic dye and allow the beater to run for another ten minutes; next add a solution of 4 per cent of resin soap and run for fifteen minutes, when the back waste water should show clear, indicating that all the dye has been taken up by the pulp. In this method of dying the dyestuff is thrown down by the precipitate of aluminum resin soap incorporated with the fiber pulp. When dyeing colors involving the use of a mixture of several dyes, it is best not to add the mixed dye solution, but to add the several colors in solution separately. The dyestuff solutions as well as the other solutions employed should be rather dilute in order to enhance the uniformity of their distribution as far as possible.

"The acid dyes are applied in the same manner as above described for the basic colors. When mixtures of mechanical and sulphite pulp are used the two fibers often do not come up to the same color with the acid dyes; therefore it is recommended that paper dyed with the acid colors should be topped with basic dyes as these come up evenly on both fibers. The solution of the basic dye should be added after that of the acid color has been properly and thoroughly worked in.

"The substantive and sulphur dyes are also applied in the same manner as the basic dye with the use of aluminum sulphate and rosin soap. Some of the substantive dyes may be applied without the addition of these chemicals but the color is apt to bleed out into water and cause stains. The sulphur dyes must be first dissolved in the necessary quantity of sodium sulphide.

"The dyeing of made up paper (so-called staining) is done almost entirely with the acid and basic dyes. The colors should be well dissolved in water and the solutions filtered. The color solution is brushed on the paper either by hand or by the use of suitable brush machines. Tissue paper is also extensively dyed for use in making paper flowers and other ornamental objects; in this case acid, basic and substantive dyes may be employed and the dyeing is usually done in a dyeing machine in which the paper is run through the concentrated dye solution and then on to hot cylinders for drying. Wall paper and coated paper are usually dyed by an operation similar to that of padding, the strong color solution together with suitable sizing and filling agents being applied to one surface of the paper in a padding machine by means of rollers and then dried. In the dyeing by this method pigment colors may also be used, as well as the coal-tar color-lakes made by precipitating the dyestuff on a metallic base."
—Clarence J. West, National Research Council.

The salesman who gets there first has a tremendous advantage. By getting there first he makes a lasting impression.—The Hoffman Henchman.

The optimist sees a better world through all the smoke; the pessimist only notes the destruction of the flames.—The Electric Bulletin.

He who has conferred a kindness should be silent, he who has received one should speak of it.—Seneca.

You can't take a "short cut" on a straight road. You may take a "short cut" on a crooked road, but not on a straight one. This is the reason why there are no "short cuts" in the plan of salvation.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 3rd Sept. The evidences of improvement in the general trade situation, which have been noted for the last two weeks, still continue to be manifested, though, up to the present, in a considerably less decided form than is to be desired. Stocks, in the hands of both jobbers and consumers, however, are still being depleted, and replenishment of some sort must set in ere long. Next week will see the end of the Canadian National Exhibition, and it is generally assumed that, if business generally is going to pick up substantially and as to this opinions are of a conflicting character — unmistakable signs of trade revival will be in evidence. As to the likelihood of a general trade revival on any considerable scale setting in in anything like the near future, the writer, who has made it his business to discuss this question in most quarters which might, prima facie, be expected to be able to form a more or less reasonable forecast, is frankly not oversanguine. The best that we can hope for, in his view, is that conditions generally — what is now being said is not with reference to the pulp and paper industry but to it as part and parcel of the industry of the country at large — will mend gradually from now on until next Spring when a really substantial improvement should get well under way.

The annual statement of the Laurentide Company, which was handed out last night, is being pointed to today as evidence that, during the year ended the 30th June last, for the latter half of which the industry was popularly believed to be "in the doldrums," a concern admittedly exceptionally well administered, could show handsome profits. The company's profits for the year totalled no less than $4,615,828, after allowances for taxes, depreciation and depletion, thus placing it in an excellent position to deal with such writing-off of inventories as may be considered necessary under existing trade conditions and to carry on over the period of more or less slackened business that may lie immediately ahead. After the payment of interest and all other charges and dividends at the rate of six per cent, the surplus for the year was $2,787,928. It was thought to be conservative policy to set aside a reserve of $2,000,000 for possible depreciation of inventories. The Company has no bonded indebtedness or preferred stock, and its loans from the bank are fully covered by income earning investments.

PULPWOOD.—Under present conditions, there is a manifest resolve to go slow both in the buying and in the cutting of pulpwood. Most of the pulp and paper mills are well supplied with wood. Operations in the woods are not likely to be on a large scale, comparatively speaking, this winter. The number of cutters is to be diminished and the wages paid to them have been reduced to less than half the amount paid last winter, so far as Ontario is concerned. The pulpwood market is exhibiting little briskness for the moment, nor are there many signs of a likely improvement in the near future.

PULP. — The pulp market is distinctly lacking in life. Quiet trade conditions and certain recent occurrences are having a "slowing-up" effect on conditions at many of the mills.

NEWSPRINT. — Several mills continue to be kept very busy. There is notably big production going on at the Laurentide and Abitibi plants. Public interest still centres in the question of the price of newsprint for the last quarter of this year. It seems to be generally assumed in publishing circles that this price will be $80 per ton.

BONDS AND WRITING PAPERS. — Mills report that business in bonds and writing papers showed a welcome improvement last August. A representative of one large mill told the writer that last month was a good deal better than July, and that there was every prospect that this month would witness a substantial improvement over last month's business. This is satisfactory not only in itself but also as an indication that commercial houses, which are the big users of these lines, find that business is picking up.

WRAPPING PAPERS. — The improvement noted in the wrapping paper situation — particularly in its kraft aspect — is still maintained.

NEW YORK MARKETS.

New York, Sept. 3.—(Special Correspondence). — The International Paper Company has announced a reduction of $15 per ton in the price of newsprint paper, bringing the new quotation down to $80 a ton. This information was obtained in a statement published by a local news gathering agency which quotes President Philip T. Dodge of the I.P. as saying the "International Paper Company has fixed the price of newsprint for the last quarter of the current year at 4 cents a pound at the mill. This is a reduction of three-quarters of a cent a pound from the price maintained for the third quarter."

At the offices of the I.P. at 30 Broad street today it was said that Mr. Dodge was away on a vacation and had been gone for several days. At the sales department the reduction was neither confirmed nor denied, it being stated that no information could be made public in the absence of Mr. Dodge or the other officials of the company. There is consequently some question as to whether the reduction in newsprint prices by the I.P. has been officially promulgated, though most members of the trade in New York believe that even though the cut in price has not been officially made that it will be within the next few days.

Obviously the rumors and reports relative to price reductions are having a deterrent influence on business in newsprint. Publishers are holding back in buying excepting when in urgent want of paper, and most publishers are going to their reserve stocks of paper to cover present requirements rather than place orders pending a stabilization of quotations. Some low prices are mentioned in connection with spot sales of newsprint, it being said that standard news in rolls is being bought down to 4 cents a pound and lower from second hands, who evidently are liquidating stocks at reduced prices before the new scale of contract prices becomes

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effective. From all indications, consumption of print paper continues at a good rate. New York newspapers are printing their usual size editions, and appear to be carrying more advertising than in some time, indicating that advertising is increasing.

The remainder of the paper market shows little change. Business is of moderate volume and prices in a majority of cases hold steady. Demand for book papers seems to have improved to some extent, and quotations are stiffening, it being quite apparent that those monufacturers who a short while ago were accepting orders at rather sharp concessions from the prices quoted are now more or less firm in their insistence on full asked figures. Machine finished book is quoted at a minimum of 6 cents per pound f.o.b. New York and most mills want a quarter to a half cent above this price. Wrappings rule steady in price at a basis of 5.50 to 6 cents per pound on No. 1 domestic kraft and are reported moving in fairly good tonnage. Tissues continue active. Mills making fine tissues are steadily increasing their production as more orders are received, while coarse tissue mills are busily engaged and are experiencing little difficulty in finding an outlet for the great bulk of their present output.

An encouraging development is the improved demand for fine papers. Both consumers and jobbers are buying larger quantities of writing and bond papers than in some months, and members of the trade see in this a more accurate sign of general business improvement than in any occurrence in the paper market in a long time. Moreover, it is viewed as an apt criterion of better conditions to come in the paper industry and serves to buoy up trade sentiment to no small extent.

Box boards are moving in comparatively good amounts and at steadying quotations. Cost mills in the eastern part of the country are quoting $30 a ton f.o.b. New Yor kon plain chip board at present, and while an occasional sale at a little below this level is reported, most of the chip board sold now is bringing at least this figure. News board is quoted at from $32.50 a ton upward and is also enjoying a fairly good demand. This is the season when activity in the paper box industry invariably expands and board manufacturers and dealers look for a consistent broadening of demand for boards.

GROUND WOOD.—Firmness continues to be the salient characteristic of the mechanical wood pulp market. There is a steady demand for supplies and buyers are meeting the prices asked without much reluctance, indicating that they are in need of pulp and that they have faith in the stability of prices. Reports of low water at various grinding plants, necessitating further reduction in grinding operations, continue to come in, and everyone on the selling end of the trade freely expresses the belief that if present conditions keep up, a shortage of ground wood will certainly develop. The drought in all parts of the country is authoritatively said to be more severe this summer than in many years and some pulp mills are so badly affected that they have been obliged to close down entirely. Production is at a low point, and it is declared that only the existence of surplus stocks has prevented prices from sharply rising. Between $28 and $30 a ton f.o.b. grinding mills continues to be the average range of quotations, with a majority of manufacturers asking the higher figure. So firm are prices that in frequent instances stored ground wood is fetching the same figures as is freshly ground pulp.

CHEMICAL PULP.—There are two major factors making for a stronger situation in foreign wood pulp. One is that fairly heavy buying by paper manufacturers recently has removed most of the supply of imported pulp on the spot in the country, thus doing away with much of the price-cutting by importers on spot holdings. The other is that the United States Government, through the Treasury Department in Washington, is investigating charges that Swedish and German producers are dumping sulphite and kraft pulp into this country in violation of the provisions of the Emergency Tariff act. This Government inquiry has reached a stage where several import firms have been required to put up bonds on certain lots of foreign pulp lately landed here until it is proven that European manufacturers are not selling pulp in the United States at lower prices than are being obtained elsewhere. This obviously is causing importers to proceed more cautiously in bringing pulp into the country and is making for firmer prices. Kraft pulp, which only a few days ago was selling at 2 to 2.15 cents a pound ex the dock, is now reported held for a minimum of 2.25 cents, with some sales reported at 2.40 cents. Foreign unbleached sulphite is quoted at 2.50 to 2.75 cents, and bleached sulphite at 3.75 to 4 cents. These latter prices denote no change but it is significant that importers are generally asking close to the upper edge of quoted ranges.

There is little improvement in the domestic pulp situation and but little trade activity in this branch of the market. Buying interest continues to be centered on foreign pulps and most of the supply being absorbed by consumers consists of imported pulp, which is still available at lower prices than domestic producers quote.

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RAGS. The papermaking rag market is quiet and lacking in feature. Current buying is very spasmodic and at best totals but a light volume of goods, paper mills with few exceptions showing little interest in rag stock. Prices are uncertain and they depend in large measure on the circumstances attending each individual transaction. Some dealers are letting go of rags at whatever can be realized in the way of price, others are firmer in their views and are not attempting to market stock at prevailing quotations. Just as an example, dealers in New England are reported selling repacked thirds and blues to paper mills in that section at 1.75 cents a pound delivered, whereas Middle West dealers are said to be holding for 2.75 cents and higher for the same kind of rags. Roofing rags are moving in a fairly steady manner though in small quantities at an approximate price basis of around 70 cents per hundred pounds for No. 2 satinets.

PAPER STOCK.—Most descriptions of waste paper are moving in comparatively good amounts and the general trend of prices is upward. Dealers place much stress on the growing scarcity of old paper and assert that collectors are still refusing to gather usual amounts notwithstanding that prices have improved considerably during the past several weeks, it being contended that there is little room for profit even at the advanced figures. Old magazines are a very firm item and sellers are demanding at least 95 cents a hundred pounds at shipping points for No. 1 heavy books and magazines, while soft white shavings are firm at 2.35 cents a pound, hard whites at 3 cents, old No. 1 kraft at 1.65 cents, and white blank news cuttings at 1.50 cents. Folded newspapers have strengthened further in price with most dealers in New York now asking at least 45 cents per hundred f.o.b. this city, and No. 1 mixed paper is quoted at 32½ to 35 cents per hundred pounds.

OLD ROPE AND BAGGING. Old manila rope is quotably firm at around 4 cents per pound at shipping points and is moving in a fairly consistent way. Old bagging continues dull and mainly nominal in value.

A BULLETIN ON BARKING DRUMS.

The Canadian Ingersoll-Rand Company, Ltd., has just issued a 20 page bulletin descriptive of the Paulson pulp wood barking and washing drums. This new bulletin which is that numbered P. M. 110 A. is of the same excellent standard of workmanship which called forth our admiration a few weeks ago when we described their chip screens bulletin. There is a short history of the barking drum together with complete descriptions with detailed illustrations of machine parts and drums in process of erection, drums in operation and blue-print lay-outs of barking drum plants. Altogether it is a piece of printing which not only does credit to our Canadian presses but will be a very handsome and helpful addition to the working library of any superintendent or mill manager.

WHAT BELGIUM SUPPLIES TO CANADA.

It may be of interest to look at some of the detailed figures of Belgian exports to Canada in the past year. In the Dominion's returns the first mention of Belgium is under the headings of florists' stock and vegetables, n.op., jute and hemp yarn, linen thread, artificial silk, Bibles and religious tracts, vegetable parchment paper, wrapping paper, and cream separators. Under the headings of plate glass, and common window glass, we find that Belgium supplied the largest share of the Dominion's imports, not a surprising fact, since glass is perhaps Belgium's strongest line in international competition. The imports of Belgian glass of all kinds account for rather more than half the value of the Dominion's total imports from Belgium in 1921, (fiscal year ending June) and show a very great increase as compared with the corresponding imports in 1920. Unset diamonds from Belgium account for $314,915 in 1921, against $16,833 in 1920. A comparatively small quantity of ultra-marine blue was imported from Belgium, but the imports last year were more than double in quantity those from Belgium in 1920. A large quantity of saltpetre came from Belgium in 1920, but under this heading there is a nil return for 1921. The only other headings under which Belgium is mentioned as a source of supplies to Canada last year are "baskets of all kinds, n.o.p." and "lace". —Canadian Export Pioneer.

NOW HORTON STEEL WORKS, LIMITED.

The Canadian Chicago Bridge and Iron Company, Limited, of Bridgeburg, Ontario, and Montreal, Quebec, has changed its corporate name to Horton Steel Works, Limited, according to an announcement made by C. H. Scheman, general manager of the company. The new name has been selected in honor of the late Horace E. Horton, who founded the organiaztion in the United States in 1865. The Canadian organization was first incorporated in 1913 and the plant at Bridgeburg, Ontario, was constructed in that year.

The Corporation has supplied railroads and many industrial organizations of Canada with plate metal products. The company has a tried organization with its own operating officials, a complete plant, erection forces and contracting organization. In addition to Mr. Scheman, Mr. G. S. Sangdahl is district sales manager at Montreal, Mr. C. C. Gregory is manager of plant, and Mr. F. E. Gregory superintendent of erection. The main office and works are at Bridgeburg, Ont.

LEADING CONCERN IN ITS SPECIAL LINE.

It will readily be recognized and admitted that in all lines of business and commercial pursuit there are to be found firms and corporations which attain prominence and distinction in specialized lines of trade because of the high quality if the goods which they handle, the progressive methods which they employ and the careful attention which they give to the advancement of the best interests and welfare of their patrons and customers. Concerns of this character exert an important influence in developing and promoting the general business and commercial resources of the community at large, and hence become factors adding steadily to its material wealth and prosperity.

The Elixman Paper Core Co., Inc., Corinth, N.Y., widely known manufacturers of compressed paper cores and steel caps for protecting ends, is a concern which has built up a large and important business in Canada and United States and acquired a deservedly high trade standing and prestige because of the excellence and reability of its workmanship and service along this specialized line of applied effort and endeavor.

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., September 15th, 1921.** **No. 37**

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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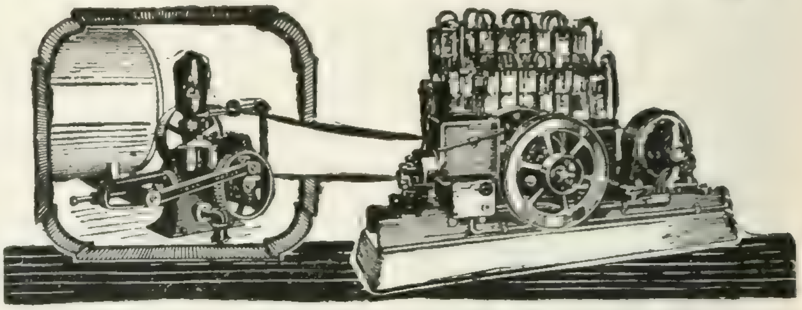

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EDITORIAL

ENCOURAGING EDUCATION.

The secretary of the Canadian Pulp and Paper Association assisted by members of the Committee of Education, has prepared for distribution a four page advertising letter, the contents of which are reproduced elsewhere in this issue. This has been sent to members of the Technical Section and the management of the Canadian mills. It is being sent also to others interested. Results already obtained, indicate that the Text Books on the Manufacture of Pulp and Paper which are being prepared at the instance of the industry by the best qualified experts on the various phases thereof, will meet with unusual success. Not only are the orders coming in in gratifying volume, but letters from a number of large concerns show that the management are taking a deep interest in the distribution of the books among their employees. One case in particular is worthy of special mention. The Provincial Pulp and Paper Mills, operating three paper mills and a sulphite pulp mill in Ontario, have taken a keen interest in their matter, as they have also in safety work and such activities. This company, in order to encourage reading and study on the part of their employees, have very generously offered to advance the first payment for the purchase of the first two volumes which are now ready, with the understanding that this money be paid back at the rate of $5.00 monthly. Very likely other concerns will follow a somewhat similar plan.

Several enquiries have been received asking advice with regard to the use of the books in night classes. every proposition of this kind is an individual problem for the mill interested but there are underlying principles common to every mill and it was largely this fact which decided the committee on including an authoritative text on the fundamental subjects of mathematics and elementary science which must be familiar to the student who would understand and appreciate the discussion of technical principles and processes. The first two volumes, which include Arithmetic, Mathematical Applications, Reading Working Drawings, Elementary Physics, Mechanics and Hydraulics, Elementary Electricity, and Elementary Chemistry, are ready for immediate distribution both in bound volumes and, to those who have ordered the set of the books, in the convenient form of separate sections in one or more pamphlets. The material is thus at hand for the immediate organization of classes in the elementary subjects.

In answer to numerous enquiries as to the progress being made in the other volumes, the following summary will doubtless be of interest. In volume 3 the manuscript on the Properties of Pulpwoods has been prepared by the authors and should be in the hands of the editor this week. The manuscript on Wood Preparing is ready for the printer. The manuscript on Mechanical Pulp is still in the author's hands but practically complete. The manuscript on Sulphite Pulp is being prepared for the printer. That on SoSda Pulp is in the hands of the printer and that on Sulphate Pulp is ready for printing. The same is true of the manuscripts on Bleaching of Pulp, Testing of Pulp and Refining of Pulp. The section on the Treatment of Pulp is now on the press. The finished volumes may therefore be expected as soon as the press and book-binding work can be accomplished at a time when labor conditions in the printing industry are somewhat unsettled.

In Volume 4 the original manuscript has been received for every section except that on the Treatment of Waste Papers. Two of these sections have been edited and several others have been carefully examined and criticized by experts in the industry in order to assist the author and, with more or less revision, will soon be made ready for printing.

Volume 5 is necessarily a little slower in development because the preparation of several sections depends upon the method of treatment of certain subjects proceeding them. Three of the sections, however, have been finished by the authors and considerable material is on hand for several of the others.

It will be of interest to remark that several requests have been received for the privilege of translating into other languages and this matter is now under consideration by the committee.

Since more than 100 prominent men engaged in the industry have cooperated in the preparation of these books, it is safe to state that they will fill an important and unusual place in the technical literature of our day, both for completeness of treatment and authenticity of information.

BRITISH CHEMISTS SURPRIZED.

Canada can well be proud of the advances made by her chemical industries, in the opinion of the prominent chemists from England and the United States who visited the chemical manufacturing centers of Quebec and Ontario. Among the industries visited, they spent some time in pulp and paper mills and saw concrete evidence of the application of scientific investigation and control to the production of one of Canada's principal articles of export.

What has been accomplished, is, however, but an indication of greater things that can be done. The application of science to our industry, deliberately, persistently, intelligently, and generously, will be the greatest factor in its future success and development. This applies not only to science in the mill, but, perhaps even more pointedly, to the production and conservation of raw materials. Instead of trying to see how fast we can turn our wood into paper, we must now endeavor to see how long we can make it last. That means applying forestry to the forest and science to the mill, so as to get the greatest possible yield. No science will contribute more to this end than Chemistry.

COBWEBS.

The last issue of Brompton News contains a very interesting article on the Royal Paper Mills Co., the ancestor of the Brompton Pulp and Paper Co. In 1898 the mill was making book and writing paper at the rate 15 tons per day. The chemical pulp mill had a similar capacity. The paper mill now has a daily production of 120 tons of newsprint, 60 tons of kraft and 55 tons of board.

A despatch from Fort William, quoted recently in the Pulp and Paper Magazine, was incorrect. No pulp has been, or is being, shipped from there to the Laurentide Co. But satisfactory shipments are going by boat to Michigan mills.

The three articles by John S. Bates, on the use of decayed wood and prevention of decay in pulp will be reprinted in pamphlet form.

In ordinary times, the American imports of European newsprint would not cause a flicker in Canada. Just now, however, there is a bit of anxiety, probably not so much as affecting profits as affecting production and employment.

A report states that the United States cuts 40 million board feet of lumber and waste 70 million feet in doing so.

Canada spends on the forests about 1¾ cents per acre, U. S. A. 3 cents, Sweden 14 cents and France $1.04.

INSURE YOUR OWN JOB.

Necessary readjustment will mean decreasing the working force in certain industries. Manufacturing plants must cut down production costs and increase efficiency. Most of them now are going over their payrolls and listing the employes who can be most easily spared.

If you want to insure your job do not allow your name to get on this list. By doing more and better work you will make yourself indispensable and your job will be safe.

You know that in your own office or shop there are certain men and women who will not be laid off under any circumstances. They are those who do the most work in the shortest time. They are sure of their places as long as the establishment continues in business. If it should shut down altogether they could get jobs elsewhere. People like that are always in demand.

This is a good time to put yourself in this class. Be so competent that your name will never be mentioned when the bosses talk over plans for shortening the force.

If the same work can be done with fewer employes in the future working forces are sure to be reduced. In some instances it has been proved that this can be done.

A big automobie manufacturing plant in Detroit, finding that the demand for its cars had decreased, reduced its working force twenty per cent. To the surprise of the managers there was but little decrease in production. Continued lessening of demand led to a further cut in the force of twenty per cent. And the men who remained on the job worked so much harder that the production per man was increased eleven per cent.

Those men who are still at work will keep their jobs, and the plant will not shut down.

Remember that when the boss of a plant makes up a list of the men to lay off he begins with the least efficient. It is the laggards and the ne'er-do-wells and the men whose interest in the job is confined solely to the payroll who go first.

After that, if a big reduction is to be made, the men whose output for one reason or another is the smallest are scheduled for vacations.

But the really valuable men, who have become a part of the business, and who are ambitious to rise in it, are the ones who are always kept.

However much unemployment there may be as the result of the coming readjustment, it will not affect you if you are among the competent workers. Times are never so hard that efficient men cannot get employment.

The thing to do just now is to keep your mind on your work and to do it better than you ever did before. That will insure your job, and a little extra work is all the premium you will have to pay for the insurance.—Daily News, New York.

KRAFT PAPER IN BETTER DEMAND.

Reports which have been appearing frequently of late to the effect that an increase was developing in the demand for "kraft" paper seem to have taken definite shape in a decidedly brighter outlook for that branch of the paper industry.

Representatives of mills manufacturing that grade of paper have been reluctant heretofore to make any prophecy as to future business on the strength of the more brisk demand which has recently been noted, but a canvass of the situation by a Montreal paper revealed the fact that there is a strongly founded feeling that the improvement is permanent, and that the near future will see still further betterment.

The movement is supposedly based upon the gradual improvement of business lines in the United States which use large quantities of kraft paper. These lines were caught with large supplies of paper on hand when the sump came early in 1920. It is reported on good authority that these supplies are about exhausted, and that orders are coming in in increasing volume for new stock. While there has as yet been no change in prices, it was stated that they would undoubtedly be higher in October if the present improvement is maintained.

The foregoing situation, if correct, will react favorably upon the position of several Canadian companies which are large manufacturers of kraft paper.

The Pro's and Con's of the Long List

There is considerable agitation and argument, particularly in the United States, with regard to what is is called "the long price list" for papers. It is a matter of general interest, as it affects several channels whereby the product of the pulp and paper industries reaches the ultimate consumer. Every reader will have, or should have, his own opinion on the subject. This article is to show what some others people think. It should be noted that both of the papers here reproduced are the arguments of American jobbers and printers; conditions are not exactly parallel in Canada, so we cannot apply them directly to the industry up here.—Ed.

THE LONG PRICE LIST FOR PAPER.*

By ROBERT J. HAUSAUER,

President, Buffalo Typothetae.

Let us make clear our understanding of a Long Price List for Paper. It is a method of listing the price of paper at a percentage above the price at which the seller is willing to dispose of that paper to a favored class.

It is the purpose of this discussion to establish that the printer is entitled to favored classification because of the service he performs in the merchandising of paper; that he earns the right to buy cheaper than can the consumer.

Others in Special Class.

Lithographers, bookbinders and stationers have, it seems to me, a similar right to favored classification, and nothing herein is to be construed as suggesting partiality toward the printer as against any other class that can qualify for favored classification under the same principles of service rendered in distribution.

Merchandising is accomplished in various ways. Sometimes the manufacturer undertakes the distribution of his wares directly to the consumer; sometimes the manufacturer distributes through retailers; and sometimes the services of a wholesaler are requisitioned in order to perfect the chain of economical and satisfactory distribution. In almost every case, the functions of the manufacturer, the wholesaler and the retailer are clearly defined — each assumes specific obligations, and the right of each to a legitimate profit above costs is quite generally recognized by the other parties to the scheme of distribution. Thus where all three agencies, the manufacturer, the wholesaler and the retailer are parties to the distribution of a commodity, the manufacturer will not sell to the retailer at the same price as he sells to the wholesaler; and the wholesaler, in turn, will not sell to the consumer at the same price as he sells to the retailer.

I have personally investigated the practice in each of the following lines of industries: Meat, groceries, dry goods, drugs, shoes, clothing, lumber, brick, plumbing supplies, electrical supplies, wall paper, hardware, furniture, paint, cement.

These industries were investigated because they occurred to me as being typical and entering vitally into the need of the public. The list is probably not exhaustive, but is sufficiently long to establish the fact that the principle for which we are contending is quite generally recognized. There was not a single industry investigated by me in which the services rendered by the wholesaler were not recognized by a positive refusal to sell to the retailer at prices as low as those quoted the wholesaler, nor one in which the services of retailer were not recognized by wholesaler in any quotations to consumers.

Having thus clearly established that in other industries it is the practice to recognize tangibly those classes who perform a service in the merchandising of commodities, in order to substantiate our claim to similar recognition, it remains only to prove that printers perform such service in the merchandising of paper.

It is well at this point to have it clearly understood that paper as spoken of in this discussion refers only to so-called fine papers — book papers, coated papers, writing, cover papers and cardboards—and has nothing to do with wrapping paper and so-called coarse papers such as usually find their outlet to the ultimate consumer through other agencies than the printer.

Printer Assists in Distribution.

I am going to point out in detail the extent to which printers enter into and assist in solving the problem of the distribution of paper.

1. Our numerous plants, serving as they do widely separated communities, engaged as they are in specializing in various kinds of printing, are convenient agencies through which to merchandise paper.

2. The personalities of printers and printers' salesmen are important factors in the distribution of paper. While it is true that printers are interested principally in selling printing, paper is the only tangible thing about which the average purchaser of printing can express an intelligent opinion. When buying printing, the purchaser buys everything, except paper, before it is finished. Therefore, much of the effort and time expended in effecting a sale of printing is devoted to satisfying the purchaser about paper.

Printer Forms Contact Point.

3. Printers and their salesmen form the point of contact between the mill and the wholesaler, on the one hand, and the ultimate consumer, on the other. Indeed, it has been admitted that as much as 95 per cent of the fine papers manufactured reaches the ultimate consumer through such agencies as the printer, lithographer and publisher.

4. Printers assume the obligation of correctly estimating the quantity of paper required to produce the job in question, and accept the consequences of error.

5. Printers assume the obligation of specifying the kind of paper best calculated to produce the desired effect with the greatest economy to the customer, and accept the consequences attending faulty judgment.

6. Printers purchase paper under trade customs designed to fit the convenience of the wholesaler of paper, and sell paper under conditions imposed largely by the needs of the consumer, absorbing any losses which arise through differences in the conditions under which they buy and those which they sell. Thus, if a customer having a mailing list of exactly fifty thousand orders, exactly fifty thousand pieces, and we buy a special size of paper for use on that order, we may be compelled to accept an overrun or underrun of from 3 to 15 per cent, in the first instance, paying for paper we cannot use on that order, and, in the second instance, making up the shortage as best we can, usually at increased expense

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* An address delivered at the Second District Typothetae Convention.

Must Conciliate Consumer.

The printer has to conciliate the ultimate consumer of paper for variations in weight and shade, accept responsibility for defects which cannot be detected before paper is cut, adapt his printing processes to overcome defects in the paper and do countless other things imposed by the wholesaler and to most of which the consumer cannot and will not adapt himself.

7. The printer actually purchases the paper and assumes responsibility for shortage resulting from faulty delivery or mishaps in printing.

8. The printer stores paper until it can be printed and the capital required to carry paper in the form of unfinished work is an important factor in the merchandising of paper.

9. The printer insures paper against loss through fire until it is printed and delivered.

10. The printer subjects himself to costs in the physical handling and counting of paper, in the storage space he is compelled to maintain, in the tools and labor necessary to handle it.

11. The printer effects actual delivery of paper to the consumer.

12. The printer purchases his paper according to the terms of the wholesaler, and accepts his pay according to the terms usual in retailing.

13. The printer sustains his normal percentage of loss in the collection of that portion of his accounts represented by the value of the paper used.

14. The printer assumes the cost of recording, invoicing and collecting for the paper used by his customers.

I submit, gentlemen, that in the performance of these duties the printer accepts very definite responsibilities in the distribution of paper and performs all the functions of a retailer.

The Printer Serves the Paper Merchant.

Imagine, if you can, a system by which the wholesaler sold all paper direct to the consumer, had it delivered to a printer, assumed all responsibility for shortage and spoilage from any cause, insured the paper, called for it and delivered it in printed form, invoiced it and collected for it. How much do you think the paper jobber would find it necessary to add to his selling price to compensate him for the additional services?

Assuming that you agree with me that the printer is the retailer of paper, that he accepts definite responsibilities, incurs expense and performs necessary services in the distribution of paper, the cost of which, unless borne by the printer, must of necessity be added to the price of paper, consider, please, the proper answer to these questions. Is it fair to permit any consumer to purchase his paper at the same price as is charged the printer, in order that the consumer may be saved the cost of the services rendered by the printer and a fair merchandising profit on the paper used?

What other purpose can a consumer have in mind who attempts to buy his paper from a wholesaler than to escape paying such cost and profit?

I do not want to be misunderstood as implying that the paper wholesaler does not enact a very necessary part in the distribution of paper. I believe quite the contrary to be the case. His capital, his warehousing facilities, his knowledge of where papers are made and where they can be procured, the work of his organization in keeping printers informed as to new lines and changes in existing lines, his ability to carry stocks sufficient to meet average requirements, are all necessary and important factors in the satisfactory and economical distribution of paper.

But I want him to respect our position. He enjoys just the privileges of recognition from the mills that we ask of him.

The point is, that in order to get paper from the manufacturer to the ultimate consumer, certain costs are created and certain services must be rendered. All these costs should be repaid in the ultimate price at which paper is sold and there should also be a profit upon services rendered by all agents to a satisfactory and economical distribution. The wholesaler's cost and profit are protected by the sales policy of the mills, and we want the wholesaler to protect our costs.

Why the Long Price List?

Having convinced ourselves as I hope we have by this time, of the propriety of our contentions and having, theoretically at least, scolded the wholesaler of paper into some semblance of acquiescence, let us proceed to our reasons for believing that the Long Price List will be the most effective way to accomplish the ends sought.

There are two ways in which the desire of the consumer to purchase paper at wholesale prices can be checked. First, by the wholesaler flatly declining to sell him at any price, and, second by the wholesaler selling him only at a price sufficiently in advance of the price quoted to the printers to cover the costs which would normally accrue to the printer plus a fair profit for the services the latter will render.

Doubtless, the simplest plan would be for the wholesaler to decline absolutely to sell to the consumer, and if that plan could be generally adopted, I would consider that the wholesalers had done their whole duty to the printer. But I, for one, would ask of the wholesaler something more than his duty. We want his sympathetic co-operation in remedying a condition which exists, I admit largely through a lack of gumption in the printer. I do not regard it as probable that the wholesaler will continue to sell much paper direct to the consumers at an advance in price to cover the printer's cost and profits.

Business-like printers would immediately add their handling costs and profits to paper even though it were furnished by the consumer, and the results would be two profits to be paid on the same transaction, a condition which the consumer would very soon understand and avoid by letting the printer purchase all paper. I believe that either method would very soon amount to the same thing, except that the wholesaler issuing a Long Price List would still be privileged to sell such fine papers as were not intended for printing, a class of business he is better qualified to handle than the printer, and which possibly may be attractive to him.

Many Have Not Learned Why They Joined.

It is the psychology of the Long Price List as it affects the efforts being put forth by the United Typothetae of America to educate printers to get a just profit that appeals to me. While the United Typothetae of America is increasing its membership at a tremendous rate and is educating most of its members and many outside of its membership to a better conception of what constitutes profit, there are still many more printers outside the Typothetae than there are in it, and, I am sorry to say, there are many within the Typothetae who have not yet found out why they joined. These printers need help, and with the return of more competitive conditions will need still more help if the burden of their accumulated failures is not to be borne by the printers who do make profit. These benighted printers are adding from just nothing to almost anything to the cost of paper to care for stock handling and profit, and are to an appreciable extent preventing sales by, printers whose prices take care of such contingencies.

Printers Will Recognize Sincerity.

I firmly believe that printers will be convinced of the sincerity of effort toward co-operation which would be manifested by a statement from the wholesalers that the Long Price List is a voluntary contribution from them to the printers in order that the latter may safely charge list prices to their customers without fear of the customer being able to purchase paper direct from the wholesaler at a cheaper price.

I believe that the amount by which the paper jobber advances his list above what he charges the printer will come to be accepted profit and handling cost due the printer, that through the education which the paper jobber and his salesmen could spread as to the proper use of a Long Price List plus the efforts of the United Typothetae of America in the same direction, a custom of charging for stock handling and profit can be made to prevail in our industry. Of course, there will always be those who cheat themselves, but the net results will be that all printers will be adding something to the cost of paper instead of nothing, and the goal for which we can all strive is that ultimately they will add their cost and a proper profit.

Protect Retailers Profit.

A further consideration that causes me to favor the Long Price List is that it places upon the wholesaler the burden of insisting that the consumer of paper pay a retailer's cost and profit. Under the existence of sales policy, should a sale be made to the consumer and the question arise between that consumer and his printer as to whether or not the printer intends charging a handling cost and profit, the printer must either lie or risk antagonizing the customer. While there are many printers who can and do courageously contend for the principle of the addition of stock handling costs and profit to every sale of paper made by them, there are many who have not the requisite courage to do this and who actually print paper furnished them without adding sufficient to cover even handling costs. Were such printers as these alone to be considered, we might perhaps look at the matter philosophically in the knowledge that such printers are themselves the greatest sufferers, but unfortunately, every job taken at too low a price and every business failure reacts so unfavorably on the whole industry that the business of the weakest must be made the business of the strongest, and anything that will uplift the industry can not safely be neglected.

As to the precise form of Long Price List to be adopted, there are many widely differing opinions. I can only suggest that which appeals to me. I believe that a price list uniformly advanced 25 per cent above net selling price to printers with a discount of 20 per cent to printers is best. Such a Long Price List is not complicated, is easy for the paper jobber to invoice under, easy for the printer to determine the net price by simply multiplying by 8 and pointing off one place.

A printer's normal stock handling cost is approximately 10 per cent of the cost of paper. Every dollar's worth of paper handled costs $1.10, and if sold at $1.25 leaves a profit of about 9 per cent. Surely this is a sufficiently modest profit.

I advocate asking for the adoption of a sales policy on the part of the paper wholesaler who seeks to sell direct to the consumer, which will commit him to give to the printer who actually prints the stock, and upon the demand of the printer, a credit on his account or a rebate in cash of the amount of the difference between the net and list price on each such sale, provided this is legal.

Some such policy as this is necessary in order to make the Long Price List convincing. The intention of the Long Price List is not to legitimatize the sale of paper direct to the consumer even at an advanced price; it is primarily to protect the printer's costs and profits. Since the wholesaler will have sold this paper at more than sufficient profit, he can have no financial reason for declining to return the profit to the printer who earns it. Without such sales policy as that suggested, there may well be suspicion as to whether the wholesalers have kept faith in maintaining the Long Price List, which could not be allayed except by examination of their books, a procedure both impracticable and distasteful alike to printer and wholesaler.

Ready to Co-operate.

It seems obvious that if we ask for the extent of co-operation involved by the adoption of the suggestions made herein, that we should be prepared to offer our hearty co-operation in return. We surely ought to patronize those who co-operate with us whenever prices are equal or nearly so, and whenever paper suitable for our requirements can be obtained.

A logical adherence to the principles upon which I contend the Long Price List should be granted, would seem to exclude from favored classification the private plant and the publisher, but I believe that you will find that such exclusion would be injudicious and probably not quite fair.

In conclusion I want to say that the Long Price List is not a panacea for our troubles. Compared with cost keeping, correct accounting, proper administration, creative selling and the study of production and emergency, it is an insignificant item in the activities that should engage our attention. But such as it is, I believe it to be a step forward in the right direction.

TEN REASONS FOR A LONG PRICE LIST ON PAPER.

(Anonymous Printer.)

1.—It helps the printer in carrying out his logical function as the one legitimate retail salesman of paper.

2.—It does more than any other single thing toward eliminating the direct sale of paper to the consumer.

3.—It teaches the printer to think of paper in terms of selling price instead of cost, and thereby causes him to automatically transmit these terms to his customer.

4.—It removes the paper dealer from competition with his own biggest customer, the printer.

5.—It gives the printer his profit even when paper is sold by the paper house direct to the consumer.

6.—It is a powerful educational factor for the consumer as it teaches him proper paper stock values as represented in the completed job.

7.—It makes the charging of a proper profit, the line of least resistance, to the printer and strengthens his selling morale.

8. It reduces economic waste in paper distribution by making possible the issuance of new discount sheets covering market changes, thereby obviating the necessity for issuing entire new catalogs and price lists.

9.—It assures the printer of getting a legitimate profit on the paper stock used in his product.

10.—It is the logical method of pricing merchandise for re-sale and has proved its stabilizing effect in other lines of trade through many years of actual operation.

"WHY-NOTS" OF THE PRICE LIST

As Presented by the National Paper Trade Association of the United States.

During the past thirty years, and particularly the last decade, the question of a Net vs. Long Price List has received more than a fair share of attention and consideration by the Paper and Printing Trades. It has been so thoroughly studied and restudied, considered and reconsidered, that the subject would seem to be almost void of further thrills.

A movement now appears under way to force the issuance of Long Price Lists by the paper merchants of the United States, and as the National Paper Trade Association has by formal resolution declared itself as opposed to such method of pricing, it is deemed wise to present the grounds for such action, and at the same time declare and define the reasons for the insistent and persistent objections of the paper merchants to this plan of pricing paper merchandise.

Before plunging into the real issues of this controversy, it will be well briefly to define the status and function of the two important factors,—Paper Merchant and Printer.

The general paper merchant cannot be described as a wholesaler and the description left there, as is the case in so any other lines of trade. He sells many kinds of merchandise through various channels for all sorts of purposes. It is not as if all papers were handled by one agency, as, for instance, the printer. There are wrapping papers, building papers, fancy papers, artists' and photographic papers, school supplies and many others. The paper merchant must accommodate himself to this complex role and establish and equip himself to serve all the different interests depending upon him. Whatever the general paper merchant is, he is ALL there is in that division of paper distribution. If he is a wholesaler, there is no retailer, and if he is a retailer, there is no wholesaler. It must be recognized, then, that in this dual capacity certain responsibilities and obligations rest upon the merchant that cannot be denied or easily shifted without working injury in some direction.

The commercial printer is not a paper merchant—either wholesaler or retailer—any more than he is an ink merchant. He does not stock and sell paper and paper products in original form. He is a manufacturer or, even more properly, a converter. He takes paper and other materials and puts them through various processes and turns out a finished job of printing in its many forms.

The printer who favors a Long Price List will say, "I care nothing about any papers you sell except those employed in printing. Give me a Long Price List covering those, and I shall be satisfied." This seems reasonable enough but it is not practical or economical for the merchant to issue several price lists covering different classifications of paper. Many papers used in printing go into channels and are used for purposes having no connection whatever with printing, and in those avenues of trade the paper merchant meets competition from tradesmen whose least worry is a Long Price List.

Printers advocating the Long Price List are seeking two objects:

First—The elimination of all direct selling by paper merchant to consumer.

Secaond—The insurance of a proper profit to the printer on all paper he handles.

The paper merchants contend that these two questions must be handled separately because they are influenced by many varying factors. The United Typothetae of America, by coupling the two questions, is ignoring certain fundamental coinsiderations which are vital to the interests of the paper merchant.

Let us first consider the big question of direct selling to the consumer. Conditions in the Paper Industry are and always have been such as to make it impossible or, at least, impractical for the paper merchant to refuse to sell certain consumers of printing papers who elect to make direct purchases of their supplies. Paper mills, with their own distributing equipment, as well as brokers and commission men, continually are soliciting this kind of business and no change in method of pricing will divert these purchases to the printer. Experience proves that the mere declaration by a large and regular buyer of printing that he is determined to buy his paper direct usually is sufficient to secure the acquiescence of the printer; the latter bows to the will and desire of his customer and prints the paper, regardless of the person by whom or the price at which it is sold.

These large direct buyers are limited, it is true, but in number and tonnage involved they are consequential factors, particularly in the large metropolitan markets.

A careful study of this whole question of direct selling leads to the conclusion that, with the elimination of certain large business, which both paper merchant and printer must admit they cannot control, the question resolves itself into one of protection business that can be controlled. No one appreciates better than the paper merchant how closely his interests and welfare are bound up with those of the commercial printer. Everything must be done to safeguard these interests, and it is gratifying to know that, in markets where these perplexing questions have been considered and discussed from this standpoint of mutual interest, a very satisfactory situation has been brought about.

It is conceded by every fair-mided person that the ordinary buyer of printing should not be permitted to buy his paper direct and have it sent to the printer any more than he should buy his ink or plates or any other component part of the finished job. If the printers, in collaboration with the paper merchants, would direct their efforts and organization work properly to defining and restricting such business, something really helpful and constructive would result.

Now, let us consider the second question—i. e., that of proper profit to the printer on paper handled. The Paper Trade never has contended against,—in fact, always has stood squarely committed to,—the principle that the printer should have this profit or handling charge on all paper passing through his plant, whether such paper was bought by him or not.

The underlying reason for the Price List agitation is the failure on the part of the printer always to secure this profit by making the necessary handling charge. How can we explain this failure? Ignorance of good business practice cannot account for it all. One of the big answers is fear—FEAR with a capital "F"—fear of a competitor—fear of a customer—fear of oneself. Why should not the printing fraternity insure its own proper profits the same as any other business, and not ask the paper merchant to be a martyr to the cause of helping the printer do what the printer should do for himself?

Now, let us answer the real question before us—

Why Not the Long Price List?

Here are some of the reasons for the "Why not":

1. Assuming and agreeing that almost immediately on its issuance it would become a matter of common knowledge that the Long Price List was subject to a discount and that the exact amount of discount also soon would be known, and again assuming and agreeing that printers could not or would not in every instance secure the Long Price List price for each lot of paper and that there would be a tendency among printers to split or juggle the discount with their customers because of competition with one another,—the net result would be that the integrity of paper prices would be absolutely destroyed and the whole plan would reflect discredit on printer and paper merchant alike, and the Industry would revert to the old order of things wherein price was pretty much an unknown quantity.

2. The printers' organizations frankly have admitted (and it is quite obvious) that they cannot obligate their members to confine all paper purchases to merchants issuing Long Price Lists or to print only such paper as they may buy. Without such reciprocal protection, the merchant would find himself in a most hazardous position.

3. Under any such system of pricing, particularly in the more important markets, it is inevitable that the larger consumers of paper and printing would seek and find elsewhere unrestricted lodgement for their business.

4. Some of the largest manufacturers of proprietary lines of paper merchandise, knowing the pitfalls in this whole proposition, positively have refused to allow their distributors to price their lines on any basis other than net-no-discount.

5. Many items in a general paper merchant's stock never reach a commercial printing press and are sold through other channels than the printing trade. Such items, because of competitive conditions, must carry net prices, and it would not be feasible or expedient for a merchant to operate with several price lists.

6. Such a Price List opens the way for many abuses and permits unprincipled merchants and printers, if such there be, to trade on the credulity and confidence of customers.

7. The Long Price List, as such, is a subterfuge, is unsound in theory and practice and would not accomplish for the printer that for which he really is striving.

8. The Long Price List, with the suggested revision in discounts to care for the fluctuating markets, is altogether impractical. Prices on all lines of paper merchandise do not move up or down in unison and an individual discount on individual lines is quite out of the question.

9. The method to be followed in pricing paper essentially is a problem of merchandising, and the responsibility for establishing and maintainng a safe and sound method rests solely with the paper merchant.

10. The legality of the plan suggested for the application of this Long Price List, at least in certain of its details, has been questioned seriously, and the provision for rebates certainly appears unethical, if it is not actually illegal.

What, You May Ask, Is to Be Said in Defense of the Net Price List?

We maintain that the Net Price List has done more to establish reliability of paper values than any other agency. It has become, in fact, a printer's compendium of paper knowledge and paper values.

It has appeared to the Paper Trade that the standardization of price by way of Net Price Lists which were known to be, and actually were, net prices has gone a long way toward giving the printer confidence in paper values and paper prices and dispelling from the mind of the individual printer the fear that his competitor was buying paper merchandise at a lower figure than he was, either by way of special price or extra discount.

Under the present method of fixing the NET full package, or ream, price as a standard of value with quantity prices graduated downward, prices can be quickly and easily changed to meet market conditions without in any way getting over into the field of fluctuating discounts from an inflated or artificial base.

These conclusions have not been reached through any one experience in any particular locality, but through an exhaustive study of, and intimate connection with, the question in all of its phases, and as applied throughout a large part of the United States.

The paper merchant stands, as he always has stood, pledged to a determination to give his customer proper protection, but he believes the protection of the rightful domain of the printer can be accomplished without restoring an obsolete custom, which long ago proved itself unfitted for the needs of the Industry.

Some literature recently was issued in a campaign to popularize the idea of a Long Price List and secure its adoption by the paper merchants of the country. Among other things, this literature contained a list of ten reasons why a Long Price List was the only correct list for pricing paper merchandise. It seems entirely fitting that in this brief we refer to these reasons and present our arguments against them:

Reason No. 1.—It helps the printer in carrying out his logical function as the one legitimate retail salesman of paper.

The commercial printer is not, and never has been, either a retail merchant or a retail salesman of steel, lumber, leather or rubber. This statement can be supported successfully and, therefore, the Paper Trade naturally refuses to accept a conclusion based on a false premise.

Reason No. 2.—It does more than any other single thing toward eliminating the direct sale of paper to the consumer.

It will not eliminate direct sale to certain large consumers or to those who always have been recognized by the trade because of uncontrollable conditions and the substantial size of their purchases as legitimate direct buyers.

The smaller consumers ought to be absolutely denied the privilege of buying direct, assuming that the paper bought ultimately reaches a commercial printing press.

It is altogether possible that a Long Price List would have just the opposite effect and encourage an extension of the custom of direct buying by large consumers.

Reason No. 3.—It teaches the printer to think of paper in terms of selling price instead of cost, and thereby causes him automatically to transmit these terms to his customer.

Is this not an indication of such inherent weakness as strongly to suggest the impossibility of the printer carrying out consistently any plan or policy that would insure his protection and profit?

Why should the printer think of paper in terms of cost? It certainly is not customary for either a merchant or a manufacturer to reflect costs to his customer.

Reason No. 4.—It removes the paper dealer from competition with his own biggest customer, the printer.

This is the same argument printers used years ago in connection with the printed envelope business. They wanted protection from the paper merchant and, to a large extent, received it, with the result that to-day a large part of the printed envelope business is altogether diverted from and lost by both paper merchant and printer.

There is a lot of big business that we frankly acknowledge the paper merchant and printer always will compete over until the printer ceases considering himself a retailer of paper. When he accepts the fact that he is a manufacturer or converter and makes the proper charge for handling paper, then, and not until then, will all competition in paper between paper merchant and printer cease.

Reason No. 5.—It gives the printer his profit even when paper is sold by the paper house direct to the consumer.

This reason involves the granting of special rebates. We are informed authoritatively that, even in the few markets where the Long Price List has been in vogue, this rebate plan has not proved successful or generally applicable to the business. It is unethical and savors of an apology on the part of the merchant for doing something he has no business to do; in other words, if it can be proved that such a rebate is right or righteous, then we claim such sales are illegitimate, and no method can be devised to make them legitimate. All of this is quite apart from the legal phase of the question.

Reason No. 6.—It is a powerful educational factor for the consumer, as it teaches him proper paper stock values as represented in the completed job.

Apparently this is is an opinion held quite generally by the advocates of the Long Price List. Just how they argue that they can educate the large consumer, for instance, to feel that these long prices represent true values, when the basis of discount will be only too well known and a little investigation and energy on his part will open up ways, and a number of ways, to get around the condition, is a mystery. We believe it will be a powerful factor in destroying confidence in values because there are too many uncontrollable factors to protect the plan.

Reason No. 7.—It makes the charging of a proper profit, the line of least resistance, to the printer and strengths his selling morale.

Apparently in this reason the line of least resistance is sought. What would lead us to believe that a printer would develop any more courage in demanding and securing his legitimate profit under a Long Price List, when he has not been able to do this under the present plan? He knows perfectly well that a handling charge is legitimate; why, then, does he not make it? The discount profit is fixed at a larger percentage than the one considered reasonable as a handling charge so that more latitude would be afforded for juggling and splitting profits. Certainly, all past experience proves that printers would not succeed in getting all or, in many cases, any of this profit.

Reason No. 8.—It reduces economic waste in paper distribution by making possible the issuance of new discount sheets covering market changes, thereby obviating the necessity for issuing entire new catalogs and price lists.

We already have explained how impractical it is to issue an arbitrary price list, changing discounts with every market fluctuation. This could be accomplished only by having varying discount sheets theoretically for every line of paper known. If a Long Price List was issued it would have to be issued just as often as a net list. Varying discounts from the Long Price List would destroy the basis for uniform handling charges.

Reason No. 9.—It assures the printer of getting a legitimate profit on the paper stock used in his product.

This practically covers the same ground as Reason No. 7. There is nothing that can assure the printer of getting his legitimate profit except his own courage and determination to follow the same line of wise commercial practice that induces all business men to demand and secure proper compensation for services peformed.

Reason No. 10.—It is the logical method of pricing merchandise for re-sale and has proved its stabilizing effect in other lines of trade through many years of actual operation.

Here, again, the argument is based on the premise that the printer is a retailer and that he is handling paper for re-sale rather than for manufacture or conversion. The stabilizing effect of the Long Price List idea in other lines of trade radically different from the Printing and Paper Trades is no argument why the same results can be expected in our Industry.

THE NEWSPRINT OUTLOOK.

Canada exported 58,182 tons of newsprint paper to the United States in July, an increase of 11,962 tons over the month of June preceding, according to a statement just issued from Washington. American imports of newsprint from Europe during the month totaled 7,882 tons, Germany sending 4,535 tons, Sweden 2,344, and Belgium, Denmark, Finland and the Netherlands making up the remainder. In June the European imports amounted to 4,558 tons. Taking the July imports from Europe as a monthly average for the year it would mean that the United States imports of newsprint from other countries than Canada this year, in spite of all that has been said about them, will fall below 100,000 tons, or less than 5 per cent of the normal American consumption of newsprint. Meanwhile, exports of newsprint from U.S.A., normally over 5,000 tons a month, have fallen to almost 500 tons. In normal times American newsprint exports would just about offset their present rate of European imports, leaving the domestic requirements to be filled by Canadian and American mills. Canadian newsprint authorities deduce from this statement that the situation as to their American market is still very favorable and likely to improve from now on. There are indications, such as a resumption of advertising to move fall goods, an increase in newspaper circulation due to a reduction in the selling price (Many American newspapers have recently come down from three to two cents a copy), and the starting up of new newspapers, which, they say, encourages the belief that from now on the demand for newsprint will gradually increase. Recent reductions in the contract price for paper will also contribute to this end. In Canada the federal election campaign is also expected to have a stimulating effect upon the newsprint market.

ACID STORAGE TANKS ERECTED.

W. H. White of Montreal has just completed the erection of the acid storage tanks at Kapuskasing, Ont., for the Spruce Falls Company this being the second large contract for tanks this firm has completed this year for the pulp and paper industry.

The Structure of Cereal Straws

By FRANCIS E. LLOYD, F.R.S.C.

General Summary.

In the following paper the results of a study of the structure of the four principal cereal straws have been given. The purpose of this study was to determine (a) the major differences in structure, especially as to the character and length of the fiber, and (b) the possibility of distinguishing the elements (cells) of each in a macerated product, or in a straw paper.

In view of the variability and overlapping of characters the latter task is not an easy one. The present attempt was of necessity confined to samples of four cereal straws supplied to the author. These embraced only one race, doubtless an impure one, of each kind. The findings were however, checked by comparison with pure, strain material (or nearly pure), with the result that it became necessary to revise some of the conclusions. This teaches that a thoroughgoing study of this sort must embrace a large array of materials, failing which the results must of necessity be to some extent equivocal, and subject to revision. With this admission, we are however permitted to say that it is possible by careful inquiry, to determine the origin of the materials in a given straw paper, or other straw-product, with considerable certainty.

Whatever the limitations however, of this study, it will serve to bring forward a basis for future ones in the same field without being negligible with respect of the amount and character of the information it contains, which, in both regards, is certainly in measureable advance of the present available. The latter is both meagre in quantity and often inaccurate in character.

It is the purpose of the present paper to give an account of the structure of the "straw" of the barley (*Hordeum*), oat (*Avena*), rye (*Secale*), and wheat (*Triticum*), based upon specimens from single localities and of ordinary ripeness, or degree of development. (1) It will be understood that minor structural differences, such as characterize various races of these cereals, and even a single race grown in different localities, are beyond our scope. Such differences may well have to be considered in the event that the straw is to be used for special purposes, but in any event they would have to be investigated in relation to such purposes.

It is further important that the structure of the straws of grasses shall be well enough understood so that it is possible to distinguish the origin of the structural elements as they may be found in materials, such as paper, manufactured therefrom; for it is easily possible that litigation may arise requiring such special knowledge in its settlement. That this task is by no means easy was the opinion of Wiesner (1910), who has given much attention to the general subject of paper materials. His conclusions, which indicate the difficulties in some detail, are more specifically mentioned beyond. It is believed that the evidence presented in this paper is such as to show that Wiesner was not wholly justified.

What is "Straw?"

By "straw" is meant the stems of mature cereals and the remnants of various structures, especially of leaves which may remain attached thereto. The term is also extended to similar plants, such as esparto, when collected for use. "Hay" is the same thing, but is cut before maturity, so that there is a much larger amount of food material in the stems and leaves, which are at the same time less indurated, and in the immature grain (seed). When cereals are cut as hay, the unripe grain is left attached — barley hay, for example,—thus increasing the food value.

The straw that is obtained by machine threshing is always more or less broken, and in any event the leaves are shrivelled and more frequently torn away than otherwise. Owing to the peculiar structure of the leaves however, a part, namely the *leaf-sheath*, remains rather tenaceously, as will be seen later.

In reaping, the stems are cut off at about six inches from the surface of the soil. About this length of stem is therefore left behind, together with the parts (stems and roots) which lie on or below the soil surface. In this study, excepting only certain measurements of stature, these parts are disregarded, since they do not enter into any consideration of the usefulness of straw as such.

The Natural Affinities of the Cereals.

The cereals or grain plants belong to a large and universally distributed group of plants known as the grasses (*Gramineae*). It need hardly be said that these plants are of fundamental economic importance, primarily as food, and secondarily in manufacture. In addition to our own familiar grains, rice (*Oryza sativa L.*) may be mentioned as of an importance as a food supply equal to, if not greater than, all the other cereals taken together, as a present economic fact. Indian corn, or maize (*Zea mays*), sorghum, Kaffir corn ("durrha") and sugar cane are other well known examples of prime importance. In the orient young shoots of the bamboo are used as a vegetable. A very great variety of grasses furnish grazing and hay, thus adding to a grand totality of usefulness, which is discounted but little by the fact that a very few grasses are poisonous. More than usually interesting in this connection is the fact that ergot, a highly poisonous but therapeutically useful product of grains, is the hypertrophied grain (especially of rye), caused by the presence of a fungus parasite, (*Claviceps purpurea*)

Of possibly great economic importance in Canada is the wild-rice (*Zizania* spp.) which furnished a staple food for the Indians, and which offers an opportunity for extending cultivation to lands which cannot be drained sufficiently for other agricultural purposes

As to other uses, the grasses furnish material for a variety of purposes ranging from building to personal adornment. In the tropical regions are found the giants of the host, the bamboos, which more especially in the orient grow to large sizes (70 feet tall) in many cases, and furnish an amazing variety of materials for use in building, boat building, furniture making, and in the making of an endless variety of smaller articles. The straw from the heads of sorghum (broom-corn) is used in the manufacture of brooms and brushes.

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(1) The specimens were supplied by Arthur D. Little, Ltd., who also bore the major expense of the preparation of this work. The co-operation of the Forest Products Laboratory, especially through the valued assistance of Mr. W. B Stokes in the preparation of negatives herein used, is heartily acknowledged. Mr. G. G. Moe collected material for comparison at the Experimental Farm, Ottawa.

The mechanical qualities which fix the value of the material for these purposes are the combined strength, lightness and springiness which are exemplified in the highest degree in the split bamboo fishing rod. Even ordinary straw of common grains shows these qualities in a remarkable degree, relatively to the amount of material in it. One needs but to recall the lightness and stiffness of a lemonade straw now largely supplanted by imitation straws made of paper and paraffine—to realize this.

The Structure of Straw in General; Gross External Structure.

As has been indicated, straw consists of two parts, the stem and the attached leaves. The stem is composed of straight stretches of approximately cylindrical shape and various lengths, the *internodes,* articulated at the *nodes.* Properly speaking the node is merely the transverse region of the stem from which arises a leaf. In the grasses however, the base of the leaf is usually swollen, forming a prominent band (motile organ) about the base of the succeeding internode (figure 1.). In the dried straw this swollen collar is shrunken, and presents characters which enables one to distinguish between the kinds of straw here under consideration in some degrees.

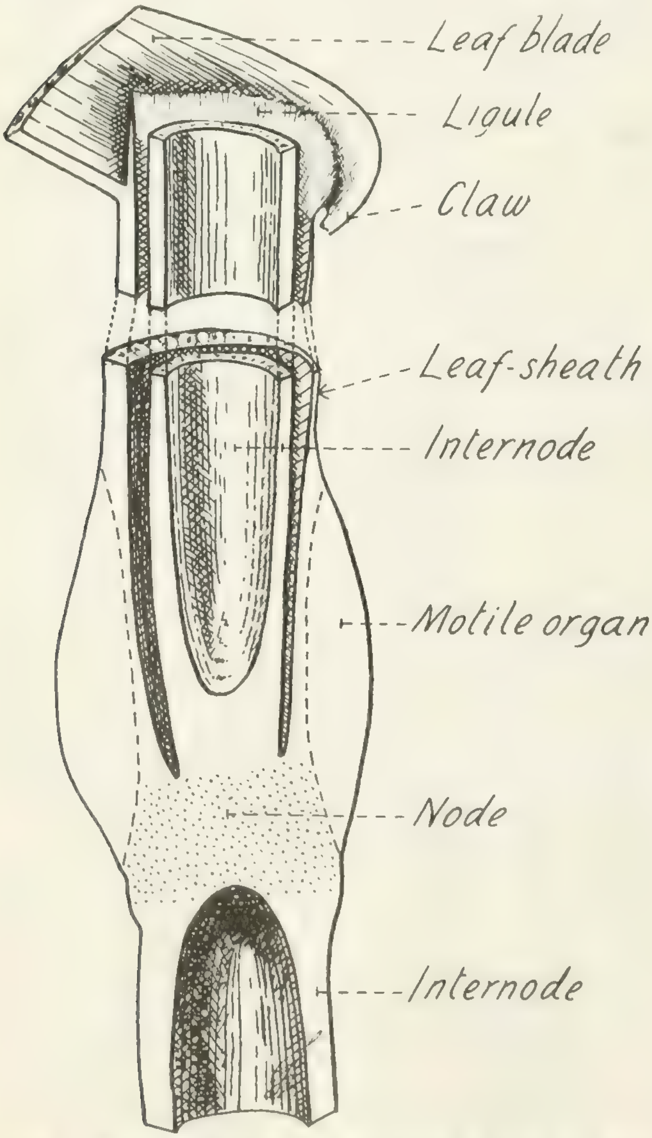

Fig. 1. Longitudinal sections through a node of wheat straw. The broken lines indicate the shape of the leaf base (false node) when dry and shrunken.

The leaf is composed of two parts, the *leaf-sheath* and the *blade.* The leaf-sheath is the lower portion which springs from the node and folds about the internode above. At the top of the sheath the blade springs away from the stem, and at this point is found a membranous projection which clasps the stem apparently as a continuation of the sheath, known as the ligule (figure 1, 29). The edges of the blade sometimes project, clasping the stem (figure 29). The projections are called auricles or, more simply, *claws.* The size, shape and other features of this organ serve as distinguishing marks for identification, which, in the absence of the grain and its accompanying parts, are relatively of great use in the recognition of the kind of straw (Carrier, 1917).

At the base of the blade there is always a more or less conspicuous transverse zone, the *collar,* having, when well developed, much the same structure as that found in the swollen base of the leaf sheath, (as *e.g.* in orchard grass). When inconspicuous, as is the case in the grains here to be considered, the collar is indicated only by a more or less evident thickening of the veins as they traverse it. The collar is a motile organ analogous to the swollen leaf sheath base, and at this point the blade bends into a position approximately at right angles to the axis of the plant.

The swollen leaf bases, which may here be called *false nodes* for the lack of a better term, are important organs by which the growing grass shoot maintains its upright position. Should young grain be "lodged", the upper portion of the stem will readily regain a vertical position, and on examination it will be found that the requisite bending has been confined wholly to the false node and the ensheathed base of the included internode, as evidenced by the unequal development of the false node on the upper and lower sides. It is only rarely that the lower parts of straw do not show more or less bending. The false nodes and leaf sheaths, incidentally, help to distribute the strains imparted to the straw by bending, as e. g. under a heavy wind, so that the breaking of the stem at the base of an internode is usually obviated. This view of the mechanics of the grass straw has been denied, but without good reason. As a matter of fact the younger tissues of the internode are at the base, and the weight of the parts above could not be successfully supported during development were it not for the leaf-sheaths. This is very obvious in growing corn (maize). In the dead, dry straws the false nodes very obviously form supporting bands, strengthening the shaft at these points. To be sure the tissues are in this condition hard and indurated, while in life they are much softer and more pliable. In any event, however, the mechanical value of the false node is but contributory, while its primary function is that of a motile organ, as above explained.

The leaf in the grasses is always conspicuously ribbed and veined, the veins running parallel, except for their gradual convergence toward the apex, and the same is true of the stem, except at the nodes, where the veins branch and redistribute themselves into the leaf and next node above. (2) In harmony with the anatomical scheme underlying the structure of grasses, there is an evident elongation of most of the external and internal structures. (To be continued.)

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(2) This topic is apart from the present purpose, and hence will not be further mentioned. Those interested may consult Chrysler, 1906.

Two Volumes of Text Books are Ready for Delivery

The following paragraphs are taken from the four page letter which is being distributed by the Canadian Pulp and Paper Association.

Why Books Are Needed.

Dear Sir:—Successful men are constantly studying. It is only by studying and by applying the knowledge thus obtained that they ARE successful

There are many men from maker and reel boy to superintendent and manager who want to learn more about the industry which give them a livelihood, and, by study, to fit themselves for promotion and increased earnings.

The war of competition is on, and the battle will be won by those who have knowledge. How will you obtain your knowledge of the industry? Will you get it in the hard, slow school of experience or will you take the weapon provided for you by the men of your own trade—a set of text books prepared by the best brains in the Canadian and United States industry?

These books are unique in that they represent the co-operative effort of the Pulp and Paper Industry of a whole continent. Every cent of the cost of preparing them has been borne by the pulp and paper mill of Canada and the United States, and the price asked for these text books covers only the actual cost of their publication.

You have only to glance over the synopsis on page 3 to discover the unusual attention to detail with which which the subject has been treated.

Can you afford to be without these books?

CANADIAN PULP & PAPER
ASSOCIATION.

Do You Know?

The measure of a man's value to the world and to his business is the knowledge he possesses and applies to his work. It is his understanding of the reasons for the various processes used in his trade which lifts him above the machines he operates. But he must "know," not guess. There's no surer way of testing your knowledge than by trying to answer such a list of questions as that given below. Don't be surprised if you miss one. There's so much to be learned about the pulp and paper industry that no one man can possibly know it all. That's why it has taken the combined efforts of many experts to compile these text books, to answer the thousand and one questions which are constantly arising. Look over this list, and ask yourself if you know:

What is meant by consistency?

How to find how much air-dry pulp in a car?

How to read a blue-print?

Why alum is put in the beater?

Why a press roll is crowned?

The dimensions of common sizes of paper?

How to find the production of a paper machine?

What becomes of the white water?

How to put on a wire?

Why chemical pulp lasts longer than mechanical?

What production to expect from a wet machine?

Why sulphite, soda and sulphate pulps are so named?

Why the three primary colors will produce nearly every shade?

The difference between "slow" and "free" stock, between "wove" and "laid" paper?

Why pulp for bond paper requires longer beating than for book paper?

The difference in conditions for cooking newsgrade and easy-bleaching sulphite?

What These Books Contain.

Some idea of the scope of these text books may be gained from the following synopsis. Though this synopsis presents but the barest outline of the many subjects treated upon, it will, nevertheless, repay the most careful reading. Even a glance at this outline will show that no text books even remotely approaching these in breadth of treatment, have ever before been available in the pulp and paper field.

Synopsis of Contents:

VOLUME I.—Arithmetic, Reading Working Drawings, Mathematical Applications, Elementary Physics.

VOLUME II.—Mechanics and Hydraulics, Elementary Electricity, Elementary Chemistry.

VOLUME III. Properties of Pulp Woods Wood Preparation, Mechanical Pulp, Sulphite Pulp, Soda Pulp, Sulphate Pulp, Treatment of Pulp, Refining of Pulp, Bleaching of Pulp, Testing of Pulp.

VOLUME IV.—Preparation of Rag and Other Fibres, Treatment of Waste Papers, Beating and Mixing, Engine Sizing, Coloring, Loading, Paper Making Machines, Hand-Made Paper.

VOLUME V.—Tub Sized Papers, Manufacture of Special Papers, Boards, etc., Finishing Operations, Paper Testing, General Mill Equipment, Coated and other Treated Papers, Mill Organization, Dictionary of Papers, Tables, etc.

These five volumes cover modern practice of pulp and paper making in a most practical manner and in language that cannot be misunderstood. They include even the fundamentals of mathematics and science, so essential to understanding the mechanical and chemical processes and apparatus which are fully explained and profusely illustrated. While prepared especially to meet the needs of correspondence instruction and home study, they are equally well adapted for classroom use and reference purposes.

It is distinctly to your interest to consider most carefully the opportunity here presented to you in the form of these books and with a view to increasing your earning power. By so doing, you not only improve your chance for promotion, but in an important way help to raise the status of your industry.

Volumes I and II for preliminary instruction in fundamental mathematics and elementary science are now on sale at $5.00 per volume. In the selection of classroom problems bearing on the principles and practise of pulp and paper manufacture, in illustrations and in typography they represent the highest standard in textbook publishing. Volumes III, IV and V on Preparation of Pulp and Manufacture of Paper are in preparation and will be issued shortly.

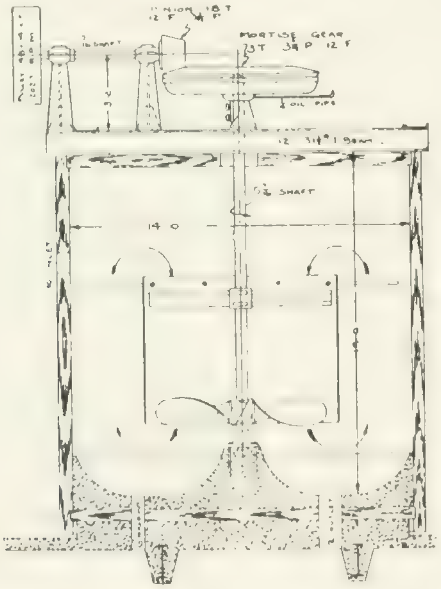
The Pulp and Paper Magazine is co-operating with the Canadian Pulp and Paper Association and has been appointed distributing agent for the textbooks. As no profit is anticipated in the transaction it is necessary to ask that all orders be accompanied by remittance. Fill out the enclosed order and mail it today.

HOW THE MIXER WORKS.

The tendency in modern news mills today is to get away from the use of beaters. In place of beaters, there is used what is known as a mixing tank. These tanks require the use of slush stock, ground wood stock being pumped from the decker chest into the mixing tank up to a certain level, after which enough sulphite is added to fill the tank nearly to the top, the number of inches of sulphite put into the tank indicating the percentage of sulphite that there will be in the finished sheet of paper. Into this tank is also placed any sizing or coloring matter that may be used in the sheet, and then by means of some form of agitation the material in the tank is thoroughly mixed.

The Jones mixing tank here described is really nothing more or less than a man's size edition of the old egg beater which we have all seen in use in the kitchens of our homes. In this respect, however, it is entitled to the name "beater."

Down in the botton of the tank, fastened to the lower end of the vertical shaft is a large cast iron propellor, exactly like the propellor used on the steamers that are being built in our shipyards. In the center of the tank and surrounding the propellor, there is a steel cylinder, supported from the sides of the tank. The propellor shaft is turned by means of a mortoise gear and driving pulley on the top of the tank, as shown clearly by the illustration. The direction of rotation of this propellor and the pitch of the blades is such that the stock is sucked down through the inside of the cylinder and is discharged from the bottom of the cylinder toward the curved bottom of the tank, which deflects it upward again, as indicated by the arrows in the illustration. In this way a very thorough mixing of the material in the tank is obtained.



The form of mixing tank above described is the one in use at the Camas plant. At the West Linn plant the mixing is done by agitators connected with a vertical shaft, and not by a propellor as in the Jones tanks. In other mills agitators are not used in these tanks, but a pump is depended on to do the mixing, this pump drawing stock from the bottom of the mixing tank and delivering it into the top of the tank.

No doubt all of us have seen the outside of these tanks, but we have not all had a chance to see inside of the tank, we hope this little article will make clear "how it works."—Making Paper.

WHAT IT COSTS TO PLANT ARTIFICIAL FORESTS.

The first survey of the actual cost of commercial planting of forests now being made by the Woodlands Section of the American Paper and Pulp Association, is showing some surprising results, indicating that the costs are much lower than has customarily been estimated. The paper mills of the county are beginning on an extensive scale to grow from the seed up their trees from which their future paper mill will be made, and the chief handicap to success is now found in taxation methods which prove a constant drain on the owner during the period of growing the crop.

The cost figures have been classified by districts. The New York cost is figured at less than $15 an acre in most cases. One extensive plantation cost $13 per acre, including cost of stock. Another figured the cost of seedlings at $4 per thousand, while still another found that by planting tree seeds in an ordinary truck garden as an auxiliary crop, it cost only $40 to $50 to produce 200,000 transplants. The success of the New York state plantations ranged from 90 to 99 per cent of survivals.

One big Canadian company found its cost, planting much closer than is the custom in the United States, to be $15.12 an acre. Ohio, planting cottonwoods, fixed the cost at $13.93 per acre.

New Jersey plantings, with a wide variance in species and locations, found a cost varying from $5 to $15 per acre. Vermont's costs ran to no higher than $12, with an average of $9 per acre and the New England success in general ran high, ranging from 80 to 95 percent of survivals.

This low cost figure for establishing new forests, indicate that there will be a wide expansion of reforestation activity by paper mills in the east which must grow trees for their future supply or depend on imported raw material.

A large number of inquiries have been coming in to the office of the New York State Barge Canal at Albany relative to the shipment of wood pulp consignments via the canal route. Many of the large users of wood pulp buy their product from Canadian firms and it is thought that the water route by way of the Great Lakes and the Barge Canal can be used at a great saving over rail routes. Utica users of pulp are particularly interested since they have found that, even though they must take care of shipments from the Barge Canal terminal to their warehouses, rates figure are much lower than any other present means of shipment.

The Federal Power Commission has issued a license to the Alaskan-American Paper Corporation, permitting them to engage in paper making operations in the Tongass National Forest near Ketchikan, Alaska. This brings to a consummation plans of interests back of this concern, which have been long endeavoring to establish in the manufacture of pulp and paper in the far North.

The directors of Abitibi Power & Paper Company, have declared a dividend of 1¾ per cent., payable October 1st, to shareholders of record September 20. That ought to catch the eye of some of the calamity howlers, whose voices were heard recently.

Texas Gulf Sulphur Company (Incorporated) have moved their New York Office to 41 East Forty-Second Street, New York City.

British Trade News

(From Our London Correspondent).

London, Aug. 31, 1920.

There is a ray of hope for improvement in business looming in the paper industry of the United Kingdom. Someone may ask how this conclusion is arrived at! Well, I am one who believes in the labor market as a barometer indicating the signs of progress of trade and then I look to the shipping lists for further evidence. A Scotchman may have his opinions of trade in his own beloved land; an Englishman will study his case as it is present in the North of England and the gentleman of the South will give an outlook from his point of view. Added to these are the Irishmen, who are fighting against local troubles and importations of paper. So that when all the opinions are taken, sorted, and weighed, there is always a balance found wanting. Therefore, statistics and the shipping lists are the nearest adjuncts to tell the true story. Today they show that there is more work being done in the paper mills, there is more employment, and business is making a gratifying recovery in a steady and wholesome manner. Now mills are not being run on a charitable basis, but on business lines. They are absorbing more workers; they are not doing it for charity—they are getting busy and the unemployment list is slowly coming down each day. Judging by the shipping lists and the news about London—usually dropped at the table of the evening meal—more orders are reaching the manufacturers and even the wrapping paper section is looking lively. The outlook is certainly bright and the return of business for August and September may be very encouraging. Newsprint still stands at 6½ to 7 cents a pound according to contracts made. The other day I was speaking to a big consumer of newsprint from the provinces, 50 miles from London, and he told me that he was paying 7 cents a pound —and and the paper was not half as good as Canadian.

Depression On The Continent.

Reports from France and Belgium show that the paper industry in these places is passing through a critical period. Markets have been lost and workers in many of the mills are on short time, in fact in some cases only half the complement of mill hands are employed. The only people showing signs of activity are the board mills in France and it is stated that they are doing a fair amount of trade. In Scandinavia labour troubles are still in existence and Norway is suffering most of all. The root of the evil is the question of wages and threats are being made on both sides—employers and employees—as to what the ultimate result will be. Scandinavia has been very unfortunate since the beginning of the year with the labor demands and the employers are just as stubborn as the workers. Germany and Hungary are slowly plodding along, but complaints are being made against the dullness of business.

Newsprint Consumers v. Producers.

The newsprint consumers in the United Kingdom have returned to the fight against the paper industry being classified as a "key" industry under the safeguarding of Industries Act, known as the Anti-Dumping Act. It is now law and comes into force on October 1st. When the paper industry was de-controlled it was strongly recommended that it should become a "key" industry and it is up to the Board of Trade to say so. From what I can hear the papermakers are going to prove that they should be safeguarded by the Act where there is unfair competition and an irregular rate of exchange. That is all they ask. They do not object to fair competition, but they do object to countries with debased rates of exchange sending paper into the English market and selling it at less than the cost price of the English product. The consumers cannot see the point—and they do not intend to either—because it is to their advantage. They do not want to pay 6½ and 7 cents a pound for newsprint if they get a foreign product for 6 cents or less—a price which the British mills cannot produce at. According to the new Act foreign made goods are liable to an ad valorem duty of 33 1/3 per cent if sold or offered for sale in the United Kingdom (1) At prices below the cost of production (95 per cent of the wholesale price at the mill) in the country of origin; or (2) At prices which, owing to depreciation of currency in the country of origin (not being a part of the British Empire), are below the prices at which similar goods can be profitably manufactured in the United Kingdom. When referring any matter under (1) and (2) to a committee the Board of Trade shall direct that the committee shall report also on the effect which the imposition of a duty on goods of any particular class or description would exert on employment in any industry using goods of that class or description as material. The consumer—printers, publishers, and newspapers—say they come under the last provision.

The Method Adopted.

I have mentioned that this new Act comes into force on October 1st and it would be as well for the Canadian Trade Commissioner or Chamber of Commerce in London to watch the interests of the Dominion paper and pulp men. So far as I am concerned I will do my share. Now the Board of Trade will set up a permanent body of persons having commercial and industrial experience. When an application is received for an industry to be safeguarded, five men will be selected from the permanent body to see if the particular industry should be scheduled under the Act and the Board of Trade will not refer any matter involving a question of the depreciation of currency in a country unless they are satisfied that the value of the currency in relation to British sterling is less by 33 1/3 per cent, or upwards, than the par value of exchange. Germany, Finland, and Austria are the countries to which the Act may apply. The consumers say Sweden also, but that is not so as under an old agreement with the Imperial Government Sweden and Norway cannot be interfered with—neither can France. The consumers also say that Canada and Newfoundland may be left out of account, but so far as papermaking is concerned clause 2 safeguards the Dominion and it is questionable if there could be any interference with Newfoundland.

A Case in Point.

Supposing the Board of Trade, after receiving an application, agrees that the industry of papermaking is one that should be safeguarded and brought under the Act they refer the application to the five gentlemen selected from the main body for consideration and evidence. The committee of five must not include any man whose interests may be materially affected by any action the matter decided to take, and the evidence can be taken publicly or privately—whatever they may decide—but all the persons interested and concerned in the issues involved are entitled to be in attendance. The papermakers will consequently make out their case against countries with "depreciation of currency" in the presence of the consumers and judging by the threats already thrown out by the latter gentlemen they are determined to expose the alleged high profits made by the paper mills in wartime. They will, however, have their work cut out for them to do so, as the consumers are totally ignorant on the subject of paper production and its costs. It will be a "ding-dong" fight, with its amusing sides. To one who understands both sides, the consumers and producers, it must be admitted that the former are tackling the subject from the wrong direction and the latter, if Mr. Foster, of the Papermakers Association, and a few other good ones get at them, will soon show that the consumers have "got hold of the wrong end of the stick." But amidst all these revalent and irrevalent issues, the fact must not be lost sight of that under the Act as it stands today—and it is law—a Dominion, such as Canada, could come under clause one and it is for this reason that Canadians should give instructions to their representatives on this side of the Atlantic to watch their interests during the operations of the Act. There is no antagonistic feeling against Canadian products, but in all flocks there is bound to be a hot-head out for doing mischief.

WHALEN MILLS REPORT PROFITS.

Indications of a good business year for the Whalen Pulp & Paper Mills, Ltd., are seen in the report for the year, ended February 28, 1921, submitted to the shareholders at Vancouver. Operating profits were $1,208,854, compared with $878,549, and after deduction of taxes and charges and writing down log inventories, but before depreciation, there was net profit of $530,603, compared with $323,757. Current assets show a small surplus over current liabilities, but the position in this regard has materially improved since a year ago. Current assets now stand at $2,017,865, against $1,152,747 last year, and current liabilities are $1,919,118, against $2,184,424 last year.

Inventories have arisen to $7,725,042, against $1,003,080. Current liabilities include an obligation to the Bank of Nova Scotia of $925,000, whereas the debt to bankers a year ago was $1,330,178. There is an item of accrued wages this year, amounting to $111,987, and another of accrued interest on bonds, debentures and notes, $139,875, compared with $98,223 last year. The company's investments remain unchanged at $20,000 in Victory bonds. Property assets are entered at $16,976,053, against $15,455,074 last year. Total assets are $19,657,663, against $16,818,608.

President McGarry reports that during the year $858,735 was spent on capital improvements, being chiefly on the completion of the work commenced in the previous year, and the improvement of power conditions at the Port Alice plant. The sum of $100,000 of 6 per cent. first mortgage and refunding gold bonds, and $100,000 gold notes were retired during the year, and the sinking fund provision for retirement of gold notes increased by $88,354.

"To provide for the extraordinary depreciation in certain commodity prices in the latter months of the year," says Mr. McGarry, "practically $300,000 was written off the book values, chiefly on logs and finished products. The valuations placed on all inventories were cost or market, which ever was the lower.

"While the pulp markets were very satisfactory for the first part of the year, full advantage was not enjoyed by your company by reason of the construction work being carried on. The markets suddenly declined last fall to a very marked extent, which reflected on your earnings.

"All construction work has now been completed, and it is the policy of the present management to make no further capital expenditures unless essential to the prosperity of the industry."

The comparative production by the Whalen Company for the past three years was as follows:

	1921.	1920.	1919.
Pulp (tons)	51,731	47,962	41,814
Lumber (M. feet)	8,423	12,731	20,081
Boxes (M. feet)	536	1,493	1,896
Shingles	53,824	61,198	49,190

DESIGNER OF RECORD NEWS MACHINE RESIGNS.

Mr. George D. Kilberry, who has been chief engineer of the Paper Machinery Dept. of the Dominion Engineering Works, Ltd., is retiring from that position on Oct. 1, but is not ready to announce his plans quite yet, but expects to remain in Canada. Mr. Kilberry come in from the United States to take charge of the design of the new Laurentide Machines and has the satisfaction of seeing them well ahead of all previous records for news print machine speed. The Dominion Engineering Works did well in choosing him and now have the enviable reputation of having built the first machine in the world to make high grade newsprint successfully and continually at more than 1000 feet per minute. In fact, it looks as if the Laurentide machines can, and will, be run at 1100 feet.

CHANGE OF ADDRESS FOR T.A.P.P.I.

Changes are impending in the secretary's office of the Technical Association of the Pulp and Paper Industry. The office itself has been removed from 542 Fifth Avenue to the general offices of the American Paper and Pulp Association, 18 East Forty-First Street, New York, where quarters have been provided on the sixth floor by Executive Secretary Baker.

A meeting of the executive committee of T.A.P.P.I. takes place this week on Thursday, September 15, at which important action will be taken concerning the proposed Fall Meeting at Washington and other points, October 18 to 21. There is a growing sentiment among the officers of T.A.P.P.I. and the committee of arrangements for the meeting, that the severe depression now existing in the paper industry is a reason why the Fall Meeting should either be cancelled or postponed to a date in 1922. A definite decision on this question will be reached at the meeting of the executive committee, at which new policies for the Association are also likely to be put into effect.

FREIGHT RATES ON PULPWOOD LOWERED.

The Manitoba government has been successful in having freight rates on pulpwood lowered. Premier Norris announced that the new rate would be the same as that on cordwood, the extra charge on pulpwood of 2½ cents per hundredweight having been removed.

Asked if the government intended pressing the board of railway commissioners further for reduced freight rates, Premier Norris said the government would exhaust every effort to have the rates lowered before this year's grain crop starts to move in quantities to the head of the lakes.

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Determining Moisture Content of Wood. Chem. Met. Eng., xxiv, 964 (June 1, 1921); **Pulp and Paper**, xix, 616 (June 9, 1921). A specified weight of wood chips, usually 100 Gm., is immersed in kerosene in a flask of retort, and the mixture is heated until all the moisture has been driven off. The latter is cooled in a condenser and collected in a graduated cylinder, along with the small amount of oil which is vaporized. The amount of moisture in the chips is read directly from the graduate. This method has been checked for accuracy with the method of weighing samples before and after oven drying, and the variation found to be less than 1 percent.—A. P.-C.

A-1. Soluble Carbohydrates in Pine Wood. S. SCHMIDT-NIELSEN. **Tekn. Ukeblad**, lxvii, 353-5 (1920); **Chem. Ztg.**, xlv, **Rep.**, 32, (1921); **J. Soc. Chem. Ind.**, xl, 342A (May 31, 1921). Pine wood felled in the spring was finely rasped, and after extraction with ether was repeatedly extracted by alternate boiling with water or 0.3 percent acetic acid and treatment with alcohol. By more than twenty successive extractions a yield of soluble matter was obtained equal to 12.04 percent of the original wood or 13.9 percent of the dry substance. In the determination of reducing sugars by Kjeldahl's method 1 Gm. of the dried extract, before inversion, reduced 0.1898 Gm. of copper, and after inversion with 2 percent hydrochloric acid it reduced 0.6155 Gm. of copper. A substantially similar extract was obtained from pinewood felled in the winter, but the yield in this case was only one-seventh of that mentioned above. Pentosan determinations on the extract indicated about 23 percent of xylose.—A. P.-C.

A-3. Papyrus Pulp. RAYMOND FOURNIER. **Papeterie**, xliii (May 10, 1921). Description of papyrus, of its microscopical characteristics, and method of preparation of the paper pulp. The fibers are fine, regular, cylindrical, but generally rather short, the extremities being pointed and sometimes bifurcated. They are 0.5-3 mm. long (av. 1.80); 0.008-0.025 mm. in diameter (av. 0.012). The felting power (length/diameter) is 150, which is rather good. The lumen goes right through the fiber and is about one-third of the diameter. The fibers are colored light yellow by iodine and sulphuric acid, darker yellow by chloride of zinc and aniline sulphate, and red by phloroglucinol. The purified cellulose fibers are colored violet by chloriodide of zinc. Papyrus may be treated by lime or cold caustic soda, but the regular soda process is the one best suited; and by varying the conditions of working (percent of caustic soda, time and pressure of cooking) different qualities of pulp are obtained suitable for practically all kinds of papers. The stems are crushed between rollers, boiled for a few minutes in water, caustic soda added, and the whole boiled some time longer. The material is then defibered and thoroughly washed. By using 3 to 14 per cent of caustic soda (on the weight of the dry raw material) yields of 45 to 18 per cent of pulp were obtained, and the total time required for the treatment (exclusive of drying was never more than two hours. The pulp is bleached to a cream color with a fairly low consumption of sodium hypochlorite.—A. P.-C.

A-5; A-14. Action of Sodium Hydroxide on Wood Pulp. W. G. HARDING. **J. Phys. Chem.**, xxv, 201-3 (1921); **J. Soc Chem. Ind.**, xl, 342A (May 31, 1921). The product remaining after heating wrapping paper with 1 percent sodium hydroxide solution at 100° Cent. amounted to about 60 percent of the original material, though absolute equilibrium was not reached even after thirty hours' treatment. With 6 percent sodium hydroxide the same result was obtained in about six hours. Lignocellulose could be detected in the material after treatment.—A. P.-C.

A-12. Chemical Reaction Affects Casein Glue. Chem. Met. Eng., xxiv, 964 (June 1, 1921); **Pulp and Paper**, xix, 613 (June 9, 1921). The decomposition of ordinary alkaline casein glues is not due to the action of bacteria or molds. It appears to be due entirely to chemical action of the alkali in the glue. This conclusion is based on the following observations. Increasing the amount of alkali in the glue increases the rate of decomposition when the glue is kept wet; glues containing no sodium hydroxide, although deficient in some important respects, do not decompose as rapidly as similar glues containing sodium hydroxide. Cultures of molds and bacteria could not be obtained from decomposed alkaline glues. Some chemicals which have antiseptic properties are found to improve casein glues, but this improvement is due to their chemical action rather than to their toxic properties. Glues can be completely decomposed in a short time at temperatures above that at which bacteria can live.—A. P.-C.

A-14 & 15. New Test for Lignin. P. GASPARIS **Pharm. Monats.**, i, 121-9, 137-46, 153-60 (1920); **Chem. Zentr.**, lxxxxii, II, 584 (1921); **J. Soc. Chem. Ind.**, xl, 343A (May 31, 1921). Lignified cell walls may be distinguished from those consisting of unaltered cellulose by means of a 15 to 40 percent solution of cobalt thiocyanate which colors lignified membranes blue. The reaction probably results from adsorption; it is more sensitive and trustworthy than Maule's permanganate reaction or the phloroglucinol-hydrochloric acid test.—A. P.-C.

A-14 & 0. Determination of Starch in Presence of Cellulose. F. KAULFERSCH. **Z. Nahr. Genussm.**, xxix (June 15, 1920); **Chimie et Industrie**, v [illegible] May, 1921). Ammoniacal copper oxide is used to dissolve the cellulose which prevents the diastase from acting on the starch grains. The copper is then precipitated by means of hydrogen sulphide, and the diastase is allowed to act in the presence of the precipitated copper sulphide for about six hours at 65° Cent. The liquid is filtered and the sugar inverted by heating with hydrochloric acid under a reflux condenser. The glucose thus formed is determined by means of Fehling's solution. Two determinations were run simultaneously on two portions of 0.2 Gm. of flour, to one of which was added a solution of 0.02 Gm. of filter

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UNITED STATES NOTES

A clarion call for action on the forestry question has been issued by the American Forestry Association. It urges upon publishers the necessity for taking immediate steps for the replenishing of forest crops to furnish future pulp material. In a statement based upon a recent report of the Committee on the Elimination of Waste in Industry of the American Engineering Council, the American Forestry Association makes the suggestion to the World Press Congress meeting in Honolulu next month that it adopt a program for the elimination of preventable wastes notably from conflagrations and also that it put into effect without further delay some comprehensive reforestation plan. "There are 81,000,000 acres of idle land in the United States that should be put to work growing trees at once," the association's statement concludes, "This is a proposition directly tied up with national prosperity now and in the future. All the money in the work world will not buy food. All the money in the world will not produce trees to order. We must begin right now to protect what forests we have and to save forest crops every year just as we have corn and wheat crops. The Committee on the Elimination of Waste in Industry has performed a valuable service but the great waste is idle land, and a great part of it is in the East and Middle West close to the greatest consumers, who are now paying thousands of dollars on freight rates, to say nothing of a high market price." Touching upon what it regards as the practical phases of the situation, the association points out that "there is no question but that a perpetual supply of pulpwood for all needs is a possible and feasible scheme. It will not, however, come merely for the asking. There must be, first, a proper national forestry law with adequate provisions for fire protection and government of reforestation on a scale large enough to demonstrate the economic soundness of the idea; second, every other State must adopt thorough-going forestry principles with provisions to protect growing timber from exorbitant taxation; and, finally, with these laws as a basis, the pulp and paper industry, together with all other wood-using industries, must be made to see that in practical reforestation and conservation lies their only salvation. To accomplish these three things will require the united effort of every man and woman. We should not leave to any group of foresters and legislaters the sole initiative in solving such an important economic problem; but, by the continued expression of our thought and conviction, we can urge those groups to supply our imminent needs."

As the result of a recent conference held at the headquarters of the Bureau of Standards, Washington, D.C., and attended by representatives of the paper and allied industries as well as members of the Bureau staff, committees were chosen to take up the several phases of work connected with paper standardization. This preliminary conference was attended by representatives of the American Paper and Pulp Association, the Technical Association of the Pulp and Paper Industry, the United Typothetae of America the American Engineering Standards Committee and paper manufacturing and merchandising establishments. The committees appointed are on classification, definitions, simplification and specification. They will report on their findings back to the bureau.

Damage estimated to reach a total several million dollars was caused by destructive forest fires reported from various parts of the country during the past week $1,000,000 is the approximate loss sustained through a stubborn fire which, among other things, destroyed the town of Jeffris, Wis., early in the week. This place is some twelve miles from Rhinelander, and its principle industries consisted of big lumber mills, a pulp and paper plant and a refrigerator factory. These, at last accounts, were in danger of complete destruction. Two hotels, the theatre, several stores and dozens of homes were burned. A ten mile blaze to the north and south of Arthyde, Minn., called out 1,000 soldiers of the Minnesota National Guard as fire-fighters in addition to the regular and volunteer forces that were working to check the fires. Despite their combined efforts, the village of White Pine was wiped out, and the fires continue at this writing only slightly checked, having been fanned up anew when a thirty mile wind sent them out beyond the control of fire lines. Two other extensive fires, one in the vicinity of Old Town, Maine, and the other on the Idaho-Montana border, were subdued when rains or subsiding winds came to the aid of the fire fighters.

The Argo Paper Mills Corporation, recently incorporated under the laws of Delaware with a capital of $3,000,000 to engage in the manufacture of print paper, has acquired the old plant and buildings of the Argo Company at Gloucester, N. J., and has completed plans for their remodelling upon an up-to-date basis. The new concern will deliver its entire product of newsprint to the Philadelphia *North American* and the Philadelphia *Record*, long ferm contractural arrangements having been entered into to that effect. The plant is in a location convenient to the quarters of both newspaper quarters, being just across the river from Philadelphia, and making the haul of the rolls, after ferriage, just as near as at present from the warehouses. It is more than probable that the first machine to be installed in the factory will be turning out paper no later that next January. Beginning with about 50 tons a day, it is expected that 200 a day will be reached with the installation of the last machine in another year or two. The officers of the new corporation are U. M. Waite, of the Reliance Mill and Trading Corporation, New York; president; N. A. Considine, head of the Paper House of Pennsylvania, secretary; and Raymond J. Considine, treasurer. The latter is also an official in the Paper House of Pennsylvania

W. H. Carter, D. H. Greene and F. M. Gill, according to an announcement made by Gill & Co., brokers, Denver, Colo., have purchased the main building of the old Platte River Paper Mill Company in Denver and will begin as soon as the plant can be put into shape to manufacture paper products—principally tissue napkins and wrapping paper. The company is to be known as the Colorado Paper Products Company. Waste paper will be used exclusively as raw material. Ultimately the company intends to branch out in the manufacture of flat news print.

PULP AND PAPER NEWS

The Canadian National Exhibition, which annually renders Toronto the Mecca from all over the country for those who wish to keep abreast of the times in agricultural, scientific, artistic and industrial progress, was, this year, admittedly the most successful in a long line of notable successes. For one thing, the attendance eclipsed all previous records—a result, no doubt, largely due to the fine weather that prevailed, almost unbrokenly, throughout the fortnight. For another thing, the Exhibition has become more thoroughly and adequately systematized than it used to be. And, thirdly, this year's exhibits were on an even larger and more representative scale than ever. The Ontario Government's Forestry Department was responsible for a very comprehensive exhibit, "Algonquin Park," which should prove of very great value in giving the people of Canada some indication of the vast and varied forest wealth of the Province. In addition to exhibits of the fish found in Ontario's lakes and rivers, and of the animal denizens of the forests, there was a striking display of the woods, such as spruce, balsam and poplar in use in the pulp and paper industry. One very interesting exhibit dealt with the important subject of re-afforestation. The development of white pine, jack pine, Scotch pine and so forth, in various periods of their existence,—one year's, two year's growth, and so forth,—was very strikingly shown. Many first-rate exhibits emanated from paper firms. And an exhibit which attracted as much attention as any, by reason of its marked tastefulness of arrangement and floral decoration, was that of the Interlake Tissue Mills, of Merritton, Ont. This Company showed a very complete range of luncheon sets and outing specialties, as well as towels, wraps, etc.

Labor Day at the Exhibition, this year, was the only exception to the splendid weather which generally prevailed. But the rain did not arrive in time to interfere with the parade which was of enormous dimensions. A section of the parade, which was of more than ordinary interest this year, was that in which the striking printers figured. These took care that their banners and so forth should leave the public in no doubt as to the principle for which they conceive themselves to be on strike. Some of the speeches made, this Labor Day, by the way, were of a more extremist type than is usual in Toronto. An imported Labor M. P. from Great Britain made an able, but vehement, speech, in which he arraigned conditions, both in that and in this, with impartial bitterness.

Speaking of the striking printers, by the way, these are as confident as ever that they cannot be brought to the employers' terms. If they can hold out — and there seems no overt reason to doubt their financial ability so to do — and if the employers continue to train expert printers in their school—as they, in turn, profess that they will do—that it is just on the cards that the strike may end in rather unique fashion in not formally ending at all — if one may use such an Irishism. In other words, neither employers nor employees may give in. But, by degrees, the former may get the complement of workers they require by gradually filling the places of the strikers with the men and women they are training. At the same time, a straw may show which way the wind blows. And, if one or two things which have recently come to the writer's ears be correct, the striking printers have some grounds for their confidence that they are going to get "the long end of the stick," so to speak; at the moment, one can say no more than that. But interesting developments may occur at any time.

The announcement that the Canada Paper Box Company intends to manufacture paper barrels has evoked a good deal of interest. The barrels which it is proposed to manufacture will be used for the shipment of flour, lard, sugar, butter and so forth. Arrangements are in progress for the installation of the requisite machinery for the manufacture of these barrels.

The Province of Quebec, which leads the other Provinces in the matters of forest protection, inspection and conservation, intends shortly to put into effect a scheme for reforesting three million acres of waste lands. The Provincial Department of Lands has opened a nursery at Berthierville and has commenced experimental plantations at Lachute among other places.

A despatch from Zurich states that, owing to the heavy demands made on the Hungarian bank note printing machinery, it wore out, and the Hungarian Government was forced to engage a large Zurich printing firm to turn out for it five billion kronen worth of notes. Before long, however, the Hungarian Government found that it was running short of paper. Consequently, it has just ordered another five billion kronen worth from the same Zurich firm.

At the moment of writing, there is much talk in pulp and paper circles of the likelihood that this week will see, in one way or another, a definite termination of the uncertainty that has prevailed so long in the affairs of the Riordon Company, Ltd. It is no secret that the creditors wish to have matters brought to an issue in one way or other. In fact, the writer was talking with one of them, the other day, who expressed his views very emphatically in this sense. A meeting of representatives of bondholders interests in the United States was held in Boston last Friday, and rumors of various kinds are rife as to the kind of action that was then decided on. The claim of Fuller and Company, the contractors, against the Riordon Company for nearly $1,000,000 has now reached the courts. It was necessary that this step should be taken by reason of the fact that this Company has a workman's lien against the Riordon concern, in order that this claim should be established. But the step in question, it is said, does not foreshadow further action by Fuller and Company of a kind inimical to the interests of the Riordon Company. It is said that the claims of other concerns with workmen's liens bring this class of indebtedness up to a total of $2,000,000 or thereabouts. Among the various rumors flying around, that to which most credence seems to attach is that the Company will surrender to the bond trustees, and that the latter will either sell the assets or will carry on the concern, for a time.

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paper in ammoniacal copper oxide, and exactly the same result was obtained in both cases. A. P.-C.

A-15. Distinctive Tests for Oxycellulose and Hydrocellulose. C. G. SCHWALBE and E. BECKER. **Berichte,** liv, 545-50 (1921); **J. Soc. Chem. Ind.,** xl, 295A (May 16, 1921). Experiments were made with oxycelluloses prepared from cotton by the action of bleaching powder, permanganate, and hydrogen peroxide, respectively, and from purified cellulose (cellulose for nitration) by the action of bleaching powder, and a hydrocellulose prepared by the action of 5 percent sulphuric acid. The airdried material (1 Gm.) was mixed with water (about 50 Cc.) and titrated with N/100 sodium hydroxide solution. Litmus or phenolphthalein (at 80° Cent.) was used as indicator, the results being similar, but the end-point rather sharper with the latter. The titrations did not proceed very smoothly but were complete within a few hours (the acids are very sparingly soluble and only slowly neutralized). With bleaching powder oxycelluloses a very slight alkalinity was observed directly, due to the fact that the acids were largely present as their calcium salts; when the material was incinerated and the alkalinity of the ash added to the observed acidity, the expected values were obtained. It is thus shown that the "total acidity" of the oxycelluloses is very considerably higher than that of the hydrocelluloses or of the original materials. The presence of oxycellulose in overbleached cellulose was readily demonstrated in a similar manner. Hydro-and-oxy-cellulose may be readily distinguished qualitatively by mixing the preparations with distilled water and adding a drop of methyl orange. The liquid is colored yellow in nearly all cases but is reddish orange with certain oxycelluloses. A few Cc. of concentrated sodium chloride solution is then added, which leaves the color of the cellulose or hydrocellulose suspensions almost or entirely unchanged but gives a wine red coloration to the oxycellulose preparations. The method may be made quantitative by titrating back with N/100 sodium hydroxide solution; methyl red, however, should be used as indicator, since the end-point with methyl orange is indistinct.—A. P.-C.

A-15. Polysaccharides. III. Cellulose. P. KARRER and F. WIDMER. **Helv. Chim. Acta.** iv (1921); **J. Soc. Chem. Ind.,** xl, 342A (May 31, 1921). Comparison of the yields of cellobiose octoacetate obtained by treating cellulose, cellobiose methylcelloside, cellulose triacetate, and methylcellocide acetate with acetic anhydride and sulphuric acid under similar conditions, leads to the conclusion that cellulose must contain at least about 50 percent, and possibly more, of ready formed cellobiose complex. Hess and Wittelsbach's formula for cellulose [see **J. Soc. Chem. Ind.,** xxxix, 512A (July 31, 1920); also **Paper,** xxvii, 13 (Dec. 1, 1920), 14 (Dec. 8, 1920), 15 (Dec. 15, 1920)] cannot, therefore be accurate, as it indicates only 33 percent of preformed cellobiose.—A. P.-C.

A-15. Structure and Optical Activity of Cellulose. K. HESS and E. MESSMER, **Berichte,** liv, 834-41 (1921); **J. Soc. Chem. Ind.,** xl, 342A (May 31 1921). Levallois' observation that solutions of cellulose in ammoniacal copper are optically active is confirmed and the activity is proved to be due to the cellulose content. Under slightly varying conditions the values [d] = about —950° and —1000° are found, but accurate work is particularly difficult with the blue light. On the other hand, the "regenerated" cellulose is optically inactive in concentrated hydrochloric acid solution, as are also ethereal solutions of ethyl cellulose, aqueous alkaline solutions of xanthate (viscose) cellulose, and jellies of cellulose in neutral salt solutions. Cellulose presents, therefore, a marked example of "latent asymmetry," thus resembling mannitol, and it appears that ammoniacal copper hydroxide behaves toward it in the same manner as boric acid or borax toward the simpler carbohydrates.—A. P.-C.

A-15. Chemical Constitution of Cellulose. K. FREUDENBERG. **Berichte,** liv, 767-72 (1921); **J. Soc. Chem. Ind.,** xl, 342A (May 16, 1921). Cellobiose octacetate can be isolated in yield corresponding with the presence of 35 percent of cellobiose in the original material in a single operation when cellulose is treated with a mixture of acetic anhydride and concentrated sulphuric acid at a low temperature, the operation requiring about fourteen days. An indirect estimation of the loss of octacetate which occurs during the change makes it probable that cellulose is composed of cellobiose to the extent of more than 60 percent. This result is not in harmony with Hess's conception of cellulose (see **J. Soc. Chem. Ind.,** xxxix, 512A, July 31, 1920; **Paper,** xxvii, 13, 14, 15, Dec. 1, 8, 15, 1920) as composed of pentaglucosidylglucose residues, but is in agreement with the hypothesis that it is built up of cellobiose residues arranged in a uniform polysaccharide chain of ten or more members.—A. P.-C.

A-0. Molecular Structure of Fibrous Materials. R. O. HERZOG and W. JANCKE. **Umschau,** xxv (1921); **Chem. Zentr.,** xcii, II, 573 (1921); **J. Soc. Chem. Ind.,** xl, 342A (May 31, 1921). From experiments with Rontgen rays it is concluded that in plant fibers cellulose is present in a crystalline form disposed symmetrically with respect to the axis of the fiber. Artificial silk consists of an irregular felted mass of crystalline fragments of unchanged cellulose; artificial silk made from cellulose acetate is amorphous and consists of a mixture in which the cellulose acetate has undergone considerable degradation. Natural silk shows a crystalline character and a similar symmetrical structure to that of cellulose. Animal hair is amorphous and probably consists of two or more substances. Starch and pure fats are crystalline.—A. P.-C.

E-2. Acetaldehyde in Sulphite Alcohol. R. SIEBER. **Chem. Ztg.,** xlv, (1921); **J. Soc. Chem. Ind.,** xl, 363A (May 31, 1921). The quantity of aldehyde present in sulphite alcohol is proportional to the amount of sulphurous acid in the wort before fermentation; with an SO_2 content rising from 0.132 to 0.330 Gm. per 100 Cc., the aldehyde increases from 0.044 to 0.220 Gm. per liter of alcohol. The SO_2 content does not alter appreciably during fermentation, and the portion which is presumably combined with the aldehyde is resistant to oxidation by aeration.—A. P.-C.

E-2. Continuous Distillation of Sulphite Alcohol. Can. patent No. 208,356, SAMUEL E. OLIVER, Vancouver, B. C., Feb. 8, 1921. The desulphurized liquor, after concentration and fermentation, is delivered through fine apertures in a pipe extending over the bottom of a still. The contents of the still are maintained at a uniform evaporative temperature by electrical heating elements which are placed in the bottom of the still close to the liquor delivering pipe, and the depth of liquor is kept constant by means of an overflow pipe. The still cover is cooled by means of a spray, and the distillate is continuously removed from the still under conditions preventing re-evaporation. Claim allowed 3.—A. P.-C.

E-5. Lignin and the Sulphite Digestion Process. W. FUCHS. **Berichte,** liv, 484-90 (1921); **J. Soc. Chem. Ind.,** xl, 294-5A (May 16, 1921). Up to the present it has only been shown definitely that the lignin substances are not homogeneous and that their complexity is probably analogous to that of the proteins or carbohydrates of high molecular weight. Phenols are certainly present in them. They contain methoxy, hydroxy, acetyl, and carbonyl groups and also double bonds. Very little is known of the main portion of the lignin molecule and its structural relationships. The manufacture of sulphite pulp includes at least two separate processes, the detachment of the lignin substance from its natural form of combination in the wood and its subsequent conversion, possibly after further transformations, into soluble sulphur compounds. The nature of the former process is quite uncertain, since nothing is known definitely concerning the mode of union or admixture of cellulose and lignin. The second process may depend on the addition of sulphurous acid, and the double bond, to the carbonyl group or to the phenolic hydroxyl group; further, the possibility must be taken into account that the phenolic nuclei may behave in the sulphite process in their tautomeric form and therefore as unsaturated cyclic ketones.—A. P.-C.

K-2. Gas from Strawboard Waters. A. HERMANN. **Hot Gas,** xl, 131-5 (1920); **Chem. Ztg.,** xlv, **Rep.,** 32 (1921); **J. Soc. Chem. Ind.,** xl, 343A (May 31, 1921). A commission appointed by the Dutch government recommends storage in settling tanks followed by irrigation treatment or filtration as the best and cheapest means of purifying the effluent from strawboard mills. In a pulp mill employing this process it has been found that in the absence of air the effluent undergoes a fermentation caused by rodlet bacteria which, at an optimum temperature of 35° Cent., produce a gas containing 23 to 30 percent of carbon dioxide and 70 to 77 percent of methane. One volume of effluent evolves two volumes of gas, which is collected in bell covers, conducted to a gas holder and employed for the production of electric current for power and lighting in the mill; the surplus is taken by the local gas works and mixed with coal gas in the proportion of 25 per cent. An analysis of the gas showed carbon dioxide 24.7 percent, methane 64.3 percent, other hydrocarbons 0.6 percent, hydrogen 4.9 percent, oxygen 0.4 percent, nitrogen 5.1 percent; it contained traces of carbon disulphide but no hydrogen sulphide or carbon monoxide.—A. P.-C.

K-10. Method of Sizing Paper. Can. patent No. 208,404, THE FELCULOSE COMPANY OF AMERICA, Boston, assignee of HENRY MAY WHEELWRIGHT, Newton, both in Mass., and JOHN TRAQUAIR, Chillicothe, Ohio, all in the U.S.A., Feb. 8, 1921. The method of sizing paper which consists of treating the paper pulp in the beater with a mixture of rosin size and not over 20 percent of previously boiled modified starch and additional silicate of sodium and subsequently adding alum. The method of engine sizing paper which consists in mixing a solution of an animal colloid with rosin size, diluting it, and mixing it with the pulp in the beater to assist in the precipitation of the rosin in a colloidal condition in the beater and reduce the amount of rosin and alum necessary. Claims allowed 8.—A. P.-C.

K-19. Method of Breaking the Dried Coating on Sheet Materials. Can. patent No. 208,416, THE NASHUA GUMMED & COATED PAPER COMPANY, assignee of ADOLPH CHARLES VAN SLUYS, both of Nashua, New Hampshire, U.S.A., Feb. 8, 1921. Claims allowed 24.—A. P.-C.

L-0. Machine for Making Window Envelopes. Can. patent No. 208,362, CHARLES FRED. PFLANZE, St. Louis, Missouri, U. S. A., Feb. 8, 1921. Claims allowed 13.—A. P.-C.

R-5. German Competition in Brazil. World's Paper Trade Review, lxxv, 18. It is reported German exporters attempting to reenter the Brazilian market are quoting prices on some articles 60 percent below New York quotations and 65 per cent below London prices. —A. C.

R-5. Irish Paper Mills. World's Paper Trade Review, lxxv, 19. Large quantities of paper of the kind used in Ireland are being imported every day, no better in quality and no cheaper in price than the Irish product. It was suggested at a conference of the Irish manufacturers of wrapping paper, newsprint and cardboard, that the Irish public should see that the goods they buy are wrapped in Irish made brown paper. The same applied to newsprint and cardboard. This, it was represented, would speedily have the effect of increasing employment in the paper trade.—A.C.

R-5. Paper Prices and Education. Papir-Journalen, 6 (April 23), 1921. The Norwegian Association of Paper Makers states that the difference between the price of book papers and of newsprint is that, the paper costs 10 percent of the price of the book, while in the case of most newspapers the newsprint costs annually not more than one third to two thirds of the subscription. -P.B.

R-7. Three-Tour System. Paper, xxviii, 7 (April 20. 1921). Brief outline of the advantages of changing from the two-shift to the three-shift day with special reference to the pulp and paper mills, largely taken from a paper by ROBERT B. WOLF read at a meeting of the Engineers' Club of Philadelphia, Oct. 19, 1920. (**Monthly Labor Review,** U S. Dept. of Labor).A. P.-C.

R-11. Chemical Engineering in the Paper Industry. R. W. McKENZIE. **Can. Chem. Met.,** v, (March, 1921). Outline of the function of the chemical engineer in the pulp and paper industry, of the difficulties he has met in establishing technical control and efficient methods, and of breakdown of the old "rule of thumb" system. (See also **Can. Chem. Met.,** April, 1921, and May and June, 1921.) — A. P.-C.

R-0. War's Effect on the Paper Industry. RALPH B. PAYNE, **Paper,** xxviii, 7 (April 20, 1921). An analysis of conditions in the pulp and paper industry prior to the war (period 1909-1914) considering its size, the consumption of the various kinds of paper and the raw materials involved, as well as the development of the use of by-products; and of conditions up to January, 1917, showing the relation between the changed conditions and the European war.—A. P.-C.

R-0. Work of the Paper Division of the War Industries Board. Paper, xxviii, 7 (April 20, 1921). Outline of the work done by the paper division of the War Industries Board with a view to combating the rise in paper prices which began in the summer of 1918. A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 10th Sept. — Alike from mills and from wholesalers, reports are to the effect that business in most lines, continues to pick up. The representative of one large mill, with almost unequalled facilities for viewing the field as a whole, today told the writer that it is his view that the situation is so shaping itself that the industry in Canada will, ere long, be in a position of considerably greater soundness and stability than in the days before the war. "During the war," he went on to say, "the demand for quick production was so imperative that it transcended all others. Largely from this reason, and from the concomitant fact that Labor, whether as regards mill construction, or mill operation, or in the woods, was paid at such inflated rates, to say nothing of the inflated cost of every kind of material, including chemical, insufficient attention was paid to the matter of production costs. These are now being looked to carefully. The industry's "joy-riding" days are over — and so much the better for its permanent stability. Henceforward, everything in the nature of production costs will be on a cold business basis — the only basis on which any industry can show satisfactory results of the kind that are destined to continue. Of course, some mills were erected at the very peak of inflated prices. With regard to these, it is difficult to see how the concerns responsible for their erection can make paying propositions of them very soon. But, with their exception, mills favorably located should enjoy a substantial measure of prosperity from the present time on."

Pulp.—The pulp market is still far from active. But the demand has somewhat improved during the last few days, and there is considerably more pulp moving. Groundwood pulp is selling at from $20 to $25 a ton. With regard to these prices, it must be borne in mind that, while they appear ridiculously low as compared with the peak price, at the same time they are very good as compared with pre-war prices — about double, in fact. So far as sulphitepulp is concerned, prices vary considerably. Fair average prices are probably $60 for strong unbleached and $80 for bleached. But buyers are not easily tempted to buy, unless they can get the pulp at an attractive price. Hence they are apt to make sure that they have got a rock-bottom price before closing a deal. The result is that when a price of $60 is named, a buyer will say that he has been quoted $58, or even $55 or lower, for unbleached, and so a deal may not be closed until he has run the whole gamut of those who have pulp to sell. It should be added that the improvement, which has been mentioned, in the demand for pulp is nearly all for unbleached. That for easy bleaching sulphite is almost nil. As regards the export of pulp to the United States, the action of European firms has put a crimp in this. Some German concerns are said to be putting pulp into New York at as low as $45 a ton ex dock for unbleached. Some pulp is also coming from Finland and from Sweden at a low figure, though possibly not so low as that just quoted. As has been said, it is difficult, in the domestic market, to maintain the prices of $60 and $80 for unbleached and bleached respectively. But it seems certain that there are no very large stocks on hand anywhere save in the hands of the manufacturers of pulp. Some of the latter appear to anticipate a substantial improvement in business within the next three months. But one of them told the writer that this was only likely if prices were reduced — otherwise there would be no improvement, he said, for some six months, anyhow. Adverting once more to the export trade in pulp, it should be mentioned that, pressed by the banks to liquidate stocks, Swedish mills are marketing. This fact makes competition unpleasantly acute at the present moment. But, according to the information which come to the writer, while they are marketing, they are not manufacturing This fact is of importance, for it is likely, ultimately, to result in Great Britain purchasing a goodly portion of the product of Canadian pulp mills.

Newsprint.—The newsprint situation has undergone little recent change. But some big mills are quite busy and more than one can sell all the newsprint it can produce for the balance of the year. At the same time, the export outlook is momentarily none too good, owing to German and Scandinavian competition. Concerns in these countries are putting newsprint on the market in the United States at about $50 a ton, and this is resulting in a gradual reduction from the last-named country of Canadian newsprint.

Wrapping Papers.—A meeting of the Wrapping Paper Association was held on the 31st of last month, and, for the first time in many months, no question of a reduction in prices came forward at it. At the meeting in question, the writer is informed, a spirit of general optimism prevailed, and a reduction of prices was the last thing thought of. Indeed, there is an idea about that there will be an increase in prices at no very distant date. But, in spite of diligent enquiry on this head, the writer is constrained to admit that he has, so far, found nobody who will give away anything with regard to the prospects of this. With regard to the kraft aspect of the wrapping paper situation, it can be said, as a certainty, that the first week of this month witnessed an eminently satisfactory business, and that prospects are continually brightening. The increase in trade seems primarily due to the fact that stocks, in the hands of jobbers and consumers alike, have been suffered to get abnormally low, and, as a consequence, the former are now ordering a good deal more freely.

Toilets and Tissues.—At a meeting, on Tuesday of last week, of toilet and tissue makers, it was decided to reduce the price of both toilets and tissues by 10 per cent. Mills are busy in both lines. While wise men come from the East, large orders, so far as tissues are concerned, have been coming from the West of Canada lately. From that quarter of the country there has lately come an unprecedented demand for fruit wrap tissues.

Mr. William Whyte, Canadian representative for Ayers felts and Niagara wires has accepted the agency for the American Pulp Stone Co. of Littleton, W. Va.

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NEW YORK MARKETS.

New York, September 10. — (Special Correspondence).—Everything would seem to indicate that activity in the paper industry is finally and definitely on the increase. Reports coming to hand this week from various mill centres of the country tell of an appreciable quickening of manufacturing operations, and jobbers and mill agents in New York mostly say that business is commencing to show a healthy and steady growth. In other words, now that the Labor Day holiday is over, which in a great many ways is viewed as the end of the summer season, trading in various commodities appears to be expanding, and the customary autumn stimulation of business seems well on the way with the result that the paper industry is feeling the improved status of commercial affairs along with other industries.

Demand for paper of practically every kind continues restricted in character; that is to say consumers are buying only when in want of supplies. Nevertheless demand is quite healthy, and while general opinion in the trade is that demand will be slow in expanding during the next few months it is felt that there will be a consistent broadening of trade activity and that the demand that is due to develop for paper will be of the healthiest nature. A most encouraging feature is the gradual improvement in other lines of industry. The sharp rise in raw cotton prices, for example, has led to increased business all down the line in the cotton trade —mills are buying the raw staple, jobbers are purchasing larger quantities of cotton fabrics, retailers are laying in stocks of various kinds of cotton goods, while consumers have flocked into the market to buy in considerably heavier volume than in a long time. This same illustration might be cited in numerous other commodities, all of which means that industrial activity in general is on the mend in the States and that the consumption of paper, under such circumstances, is bound to increase, thus making for more business for paper manufacturers, jobbers and dealers.

Announcements from various quarters regarding a fixed contract price ranging around 4 cents per pound at mills on roll newsprint for delivery during the fourth quarter of the year have led to increased buying of print paper by publishers for forward delivery, and this branch of the market is substantially livelier than in recent weeks. As an instance of the improvement in newsprint, a statement issued by President Dodge of the International Paper Company several days ago, says that the mills of that company are steadily enlarging their production, and it is understood that practically all the paper now being made is being promptly shipped out from mills. Prices on spot deliveries of newsprint have sagged off to about 4 cents or slightly above that figure, and buyers appear more willing to absorb supplies than they have been in some time. One reason for the larger demand for spot lots of newsprint probably is that publishers are piecing out present requirements through spot purchases pending the change in the contract basis on October 1. Signs are not wanting also that consumption of print paper is on the rise, this being due to increased advertising and the resultant printing of larger sized papers.

Book papers are in better demand and steadier in price. Machine finished book seems fairly well stabilized at around 6 cents per pound at the mill, with some mills situated near to consuming centres accepting orders for small tonnage at this price f.o.b. delivery points. Reports generally tell of book mills running at larger capacity and of manufacturers finding a broader outlet for their product.

Coarse papers are moving in comparatively good volume, with kraft wrappings in fair demand and with tissues meeting a ready sale, especially coarse tissues. Writing paper mills are gradually increasing their operations and are shipping out larger amounts of paper than in some months, while cover paper manufacturers report a steadily expanding call for their product.

Box board mills adjacent to New York and elsewhere in the East are running very nearly full and have been on this schedule for the past several weeks, indicating that demand for boards is good. There is still very keen competition among board makers for business, however, and this keeps prices down. Plain chip is quoted at an average of $30 f.o.b. New York, while news board is selling at around $32.50 per ton.

GROUND WOOD.—Ground wood is easily holding its market position, and although prices fail to show any material advance, there is a firm tone in evidence and sellers seem to be taking a more bullish view of conditions every day. No one is pressing buyers to absorb pulp in any large quantity, and the firmness with which grinders and dealers hold unsold supplies of pulp is unmistakably the feature of the present market. Most current quotations range around $30 per ton at producing mills on prime spruce ground wood freshly ground for prompt delivery. Now and then a sale is reported at slightly below this figure, $29 and even $28 being mentioned in some quarters, but only limited amounts of pulp are to be had at these levels. Grinders are in a bad way for want of water to run their plants and production of mechanical pulp is at a low point, which accounts for the bullish feeling among those on the selling end of the trade.

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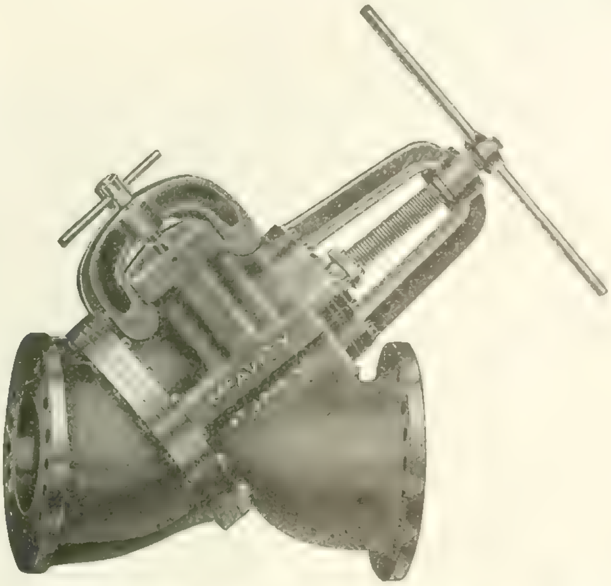

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CHEMICAL PULP.—The chemical wood pulp market displays a decidedly steadier undertone. No advance has been recorded in prices, such business as is done being at about previously reported quotations, but selling pressure has let up, particularly from import circles, and the general complexion of the situation appears to be changing for the better. The agitation against the dumping of pulp into the United States by European producers undoubtedly is one of the principal reasons for this. Importers report having to put up a bond on nearly every lot of pulp brought in from Germany and Sweden at present, which obviously makes them a great deal more cautious in bringing supplies across the Atlantic. Moreover, indications are that the great bulk of spot stocks of foreign pulp in this country has been liquidated, and this tends to make for a firmer market tone as importers are less inclined to grant further price concessions to effect sales.

Foreign bleached sulphite is quoted at between 3.75 and 4 cents per pound ex-dock on the No. 1 grade, and around 3.50 cents on No. 2 quality bleached. Unbleached sulphite of foreign origin is selling here at an average of 2.50 cents a pound on the dock, while Scandinavian kraft pulp has firmed up slightly in price to around 2.25 cents, with one sale reported during the week at 2.40 cents. It is stated that one of the leading domestic manufacturers of bleached sulphite who is now quoting 4.25 cents on No. 1 pulp has intimated that this price will be advanced on September 15. Domestic pulps are still more or less neglected by paper mills although a steady contract movement continues, while occasional spot sales are being accomplished.

RAGS.—Despite the fact that most other kinds of papermaking material show improvement both in activity and price, rags remain in a quiet market condition. There has been a little broadening of demand for some grades of new cuttings, and as was expected, dealers in frequent cases have marked up prices on these kinds of rags, but old rags hold at unchanged price levels with the tendency, if anything, still downward. New No. 1 white shirt cuttings are now held by dealers for at least 8.50 cents per pound at shipping points, while new blue overall cuttings are quotably higher at 5.50 cents, new unbleached muslins at 7.50 cents, white lawns at 8 cents and new light silesias at 5 cents. Old No. 1 repacked whites are selling to mills at from 4.50 to 5 cents per pound at dealers' points, and repacked thirds and blues at 1.50 to 1.75 cents, depending on the packing. Roofing rags are in about the same position with No. 2 satinets bringing no more than 75 cents per hundred pounds at shipping points and with most sales made at a little under this figure.

PAPER STOCK.—Prices on old papers continue to rise and there have been several sharp advances recorded this week. The strengthening position of the market seems due more to a scarcity of material than to the buying by consumers, but the fact remains that values are on the ascendency. Old books and magazines are exceptionally firm and dealers want at least 1.10 cents a pound for No. 1 books free from ground wood, with a good many quoting above this level. Shavings also are firm at quotations of 2.40 to 2.60 cents on No. 1 soft whites and around 3.15 cents on No. 1 hard white shavings. Old kraft paper is held for 1.70 cents a pound and higher, white blank news cuttings at 1.60 cents, print manilas at 85 cents a hundred, folded newspapers at 50 to 55 cents and No. 1 mixed paper at 35 to 40 cents.

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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

PULPWOOD INVENTORIES.

There seems to be an inclination, in view of the general business situation, to mark down inventories of all supplies and materials in hand at pulp and paper mills. This is a logical step to take if inventories, at the time prices of raw materials were mounting, were marked according to replacement values. The calculation of cost of production, and consequently the value of the finished product, on costs of raw material at the time of the sale of the product is generally accepted as correct accounting. It seems, however, that in the case of pulpwood there are two factors which make this item somewhat of a special case. In the first place, there is no immediate turnover of this raw material; it takes from one to two years to bring it from the forest to the mill, and obviously it cannot be immediately replaced no matter what the current market might be. In the second place, it is a raw material whose initial or potential value is constantly increasing. It is more than probable that this aspect of the situation is not given sufficient consideration by companies which have made, in some cases, rather drastic cuts in the values placed on stocks of pulp wood.

When the boll weevil destroys a large percentage of the cotton crop, an unfavorable season cuts the corn crop severely, or extensive injury is done by grass hoppers to other grain, the part of the crop that remains immediately is given a greatly increased value. A striking present instance is the failure of the potato crop, with consequent high cost of this staple article. A little thought will show that forest fires, insects, and storms, are annually destroying more wood than is being gainfully consumed, and each of these agencies of destruction accounts for a loss in excess of the annual growth of the trees that remain. Furthermore, fires not only destroy mature standing timber, but wipe out the insurance of the future by consuming young growth and burning out the soil. Insects and storms, by killing and blowing down trees, create not only an increased fire hazard in addition to the loss of the wood, but the tangled mass of logs and limbs makes it more expensive to carry on lumbering operations in such areas. The presence of this debris is also one of the greatest obstacles to successful fire fighting.

The pulp and paper mill is foolish which considers its stock of pulpwood merely as the block pile in the mill yard. We feel that it is no more correct to consider the pile of wood in the yard apart from what remains in the forest than it would be to consider the coal in the boiler house apart from that in the storage pile. When one considers the very rapidly diminishing areas of available forest and the unchanging law that scarcity of supply inevitably enhances the value of available material, it seems rather silly to make any appreciable cut in the inventory value of a block pile unless, perhaps, a portion of the wood represents an unduly high cost because of a temporary condition of extremely high wages. Our supplies of wood in Canada are very much like the supplies of anthracite coal in the United States. While there is sufficient to meet the present demand for many years, the end is in sight, and those who own the mines are wise enough to realize that the way to make them last longer is to make the coal cost more. Our forests are worth more to us every day.

Not only should wood-using industries realize the increasing value of standing forest, but our governments should be particularly awake to the situation. Two provincial governments have been urged by operators to decrease the stumpage fee, and one province has seen fit to grant this concession on the strength of a promise that, in view of the unemployment situation, lumbering operations would be carried on more extensively. Personally, we fail entirely to see where, in the face of well stocked lumber yards and with wages of woodsmen well below ordinary figures, a concession of a dollar or so in stumpage fee will be a very great inducement to extend operations in the woods. The decreased cost of wages alone ought to make sufficient difference in the ultimate cost of lumber to provide any necessary inducement for the wider purchase of building materials. To our mind, the government which, in face of the world situation regarding timber, will deliberately reduce the price of stumpage, is not acting in the best interests either of the people or even of the very wood using industries that seek to write down the value of the inventory of this great public-owned raw material.

WHAT IS STRAW?

Canada is one of the great grain growing countries of the world, and every year sees many acres added to the valuable agricultural lands of the Dominion. Much of this newly settled country, and the areas which will be developed in years to come, are now covered with trees. In the clearing of his land, the settler expects to market the wood very largely as raw material for our pulp and paper mills. Every farm, therefore, which is established, decreases to that extent for all time, the tree producing acreage. It is beginning to be a question of great concern whether we are not depleting our forests both by virtue of settlers clearing and our present methods of forest management at so rapid a rate that a substitute, or at least, a supplementary, material must soon be found for the manufacture of paper. Many experiments have been carried out and some materials have found successful application in the industry. We might mention the recently developed processes for making pulp from cotton linters and from sawgrass.

There is, however, a vast quantity of material wasted every year both in Canada and the United States which has for a long time been successfully used in the manufacture of paper and boards. Straw is the material. It is usually looked upon as rather poor stuff, suitable only for making cheap boards and coarse brown wrapping paper. It is possible, however, as well as economical, to prepare cereal straws in such a way that they may be successfully utilized in high grade papers. In a recent issue of this magazine, Mr. Martin L. Griffin pointed out the wide range of adaptability of straw and predicted an early revival of its use as a major raw material for paper making. Some months ago, an article by Mr. Ommanney described investigations which showed the value of flax straw for high grade papers. In connection with that article, we pointed out the possibility of such mixtures of flax and cereal straws as would meet almost any requirements for the manufacture of paper and boards.

On another page of this issue will be found the second instalment of an article describing a careful investigation by Prof. Lloyd of McGill University regarding **the structure of cereal straws.** We have no doubt but that this article, to which Mr. Griffin's contribution served as an introduction, will form a basis for further research into both the properties and the utilization of these various straws as a source of paper making material. On the completion of the series, the article will be available in the form of a reprint.

LAURENTIDE DIGESTER BLOWS UP.

Readers of the Pulp and Paper Magazine will recall the disastrous accident which occurred several years ago when one of the huge digesters of the Laurentide Company exploded. We have been advised that another digester of the Laurentide Company has ceased to operate. This time, fortunately, there was no loss of life, but we are sure that the people of Grand 'Mere will greatly miss the weekly appearance of the eight page paper which has so successfully functioned for several years as a factor in the life of that place. As for ourselves, we cannot quite imagine now how we are going to find out what Ed. Wardle says when somebody pinches his **tea** (we believe that is what golfers call an accessory of the links), when George Chahoon has been conferring with "The Bulls" over at the farm, or when Ellwood Wilson goes up in the air over some forestry proposition. The explanation of the matter is that the management has decided, for the present, to discontinue the publication of the "Digester," in view of the necessity for eliminating avoidable expenses.

A great, though unappreciated, conservationist was lost to Canada in the death of Senator W. C. Edwards.

MANY NEW PULP MILLS PROJECTED.

Thirty-nine pulp manufacturers are planning increased capacity or new mills in the United States and Canada, according to a bulletin to members of the American Paper and Pulp Association, based on a survey by Secretary H. H. Bishop of the Pulp Manufacturers Association.

Twenty-seven others have discarded or held in abeyance plans for increased capacity or for new mills. Of the companies planning construction, twenty-three are in the United States and sixteen in Canada. Of those who have deferred or abandoned enlargement plans, fifteen are in the United States and twelve in Canada.

"This indicates essential optimism in the paper industry," said Dr. Hugh P. Baker, Secretary of the American Association, the federation of the various branches of the industry in the United States, "in view of the fact that the American market is now being deluged with not only paper, but pulp, at prices lower than the product is being sold for in the countries of origin, indicating that systematic dumping is in progress."

The tabulation of projected construction indicates that compared with the present capacity, a production of 75 to 80 per cent of the theoretical capacity of the present and new mills will be all that the market would normally absorb. The increased production will be distributed as follows, the figures given being theoretical daily productive capacity.

United States and Alaska.

	Mechanical	Sulphite	Kraft	Soda
January 1, 1921 ...	7,825	5,700	904	1,846
Addit. during 1921	210	90	160	195
Total Jan. 1, 1922 .	8,035	5,790	1,064	2,041
Addit. during 1922	450	60	....	....
Total Jan. 1, 1923 .	8,485	5,850	1,064	2,041

Canada.

	Mechanical	Sulphite	Kraft	Soda
January 1, 1921 ...	5,541	3,060	776	26
Addit. during 1921	600	220	15	..
Total Jan. 1, 1922 .	6,141	3,280	791	26
Addit. during 1922	200	50	...	..
Total Jan. 1, 1923 .	6,341	3,330	791	26

Estimates for 1921 production are that the total production will be about 30 per cent more than the consumption of pulp in 1920.

If you have a good job, don't lose it. Study, learn and advance as fast as you can. Keep moving up, for if you are not moving up, it is quite likely you are silently slipping out. And the worst of such a situation is, you seldom know it until you slip out.

The Structure of Cereal Straws

By FRANCIS E. LLOYD, F.R.S.C. McGill University.

(Continued from last issue.)

Gross Internal Structure.

In most grasses the stem, excepting at the nodes, is a hollow cylinder of almost geometrical regularity. The exceptions in which the stem is a solid mass of tissue are, conspicuously, the sugar cane, Indian corn and a few others. The hollow joints of bamboo, used as flower holders, and in the tropics as water holders, flowerpots, etc., are familiar examples of the hollow structure; still more so the lemonade straw.

bending. The false nodes and leaf sheaths incidentally

As a mechanism possessing the maximum strength relatively to a minimum amount of material it approaches perfection, that characterizing the hollow column. Owing to the properties of the materials, which have a high modulus of bending, the column is not easily broken even under a transverse strain. The terminal internodes of the rye serves as an excellent example. One 55 cm. long, 0.7 mm. in diameter at the upper end, and 1.2 mm. at the thickest point and weighing only 0.25 grams could support 5 grams when supported 10 cm. from the base, with bending through an arc of 15 degrees in the dry condition. The walls of the cylinder were only 0.2 mm. thick. It is of course only when the strength available comes within the ordinary range of necessity that grass stems become useful for the inherent mechanical properties, the bamboos being in this regard notably efficient. Even grain straws however, meet special needs, but aside from ordinary experience.

Each internode tapers slightly towards the base, and is generally somewhat constricted just below the node. The terminal internode however tapers gradually from its thickest part, which is nearer the base, to the ear (inflorescence). The entire upright stem, or straw, consists of three to four internodes in barley, oats and rye, in wheat three, excluding the shorter internodes which occur within 6 inches of the ground. The differences in the length of straw are due chiefly to differences in the length of the internodes, and less to their numbers. The relative lengths and total lengths, based on the measurement of ten straws of each grain are shown in the table. (figure 2.)

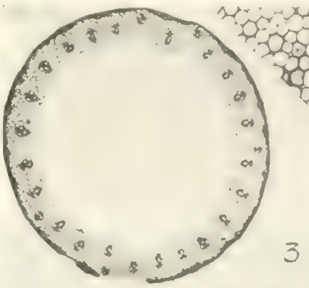
TABLE.

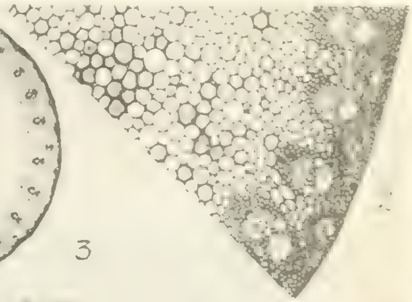
Species	Total length of straw cm.	Length of internodes Top cm.	2 cm.	3 cm.	4 cm.	5 cm.
Barley	56	28	17	8	3	..
Oat	91	49	24	16	2	..
Rye	149	53	46	28	12	10
Wheat	69	42	22	5	..	..

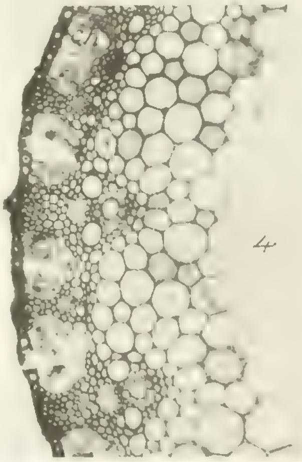
The measurements for the bottom internodes in the above samples are however only partial, since in reaping, a basal portion of the straw is left. Measurements of complete straws based on samples grown at MacDonald College, and at Ottawa, in pure, or nearly pure cultures, gave the following measurements:

	Total	Top	2	3	4	5	6	7
Barley—								
"Chevalier"	79	26	19	12	10	6	3	3
	103	34	24	17	14	10	4	..
Oats—								
"50 lb. Black" . . .	81	41	17	11	7	4	1	..
"Banner"	84	41	17	13	8	4	1	..
"Alaska, 712" . . .	95	41	22	15	9	6	2	..
"Banner"	98	42	20	15	10	7	4	..
Rye—								
Common	111	42	32	21	13	6	2	.
	112	39	32	20	13	6	2	..
Wheat—								
"Marquis"	104	50	21	11	8	4	..	..
"Marquis"	93	52	21	11	7	2	.	.
"Red Fife" . . .	105	58	23	12	8	4	..	..
"Pringles's Champ"	84	50	17	9	6	2	..	..

It is evident that, due to both racial characters and to "place effect" it would not be easy to identify the grains merely by casual measurements of the straws. Nevertheless certain features emerge from the above figures which serve as a guide of some value, especially in the relative lengths of the uppermost internodes. For example, the terminal internode in wheat is 50 per cent. of the whole straw in length, and over twice that of the sub-terminal internode. Similar comparisons bring out equally useful ratios, but it is unnecessary here to discuss them further. We may say







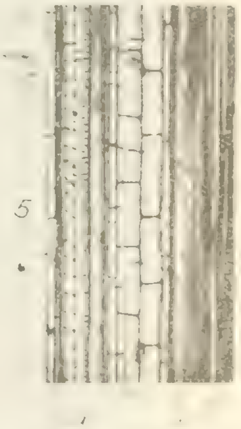


Figure 2. — Sector of a transverse section of a wheat stem taken just above a node, where the fistula is not developed and the stem therefore solid. × 65.

Figure 3. — Transverse section through an internode of barley, showing the fistula, and the bundles in the parenchyma. × 6.8.

Figure 4. — Sector of a transverse section through the upper part of the terminal internode of wheat. The fiber layer is interrupted by the chlorenchyma spaces (Ch) which underlay the stomatal zones in the epidermis. × 97.

Figure 5. — A longitudinal section of the stem of barley. The fiber layer (zf) appears quite dark on account of the small diameters of the cell lumina. The ring and spiral thickenings of the wood of two bundles (x) can be well seen. A secondary series of wood vessels can be seen on the right of the annular vessels of the left hand bundle. × 65. pa. parenchyma; f. fibers.

however that it would be possible, given the samples of straw to fix upon the grain with fair certainty by such measurements as these alone, and in conjunction with other measurements, to arrive at practical certainty.

We note that wheat has one less internode in the straw than the others. About one in ten rye straws shows part of a seventh internode. The thickness of the various straws bears no relation to the stature.

A conspicuous feature of the grass stem and leaf already referred to is the fine longitudinal ribbing and alternate "fluting", especially obvious in straw which still shows the green color, though it can be seen quite readily by the deep yellow color after the green has faded away. This appearance is due partly to the presence of low longitudinal ridges, and partly to the structure underlying the outer tissue, the epidermis. This relation will be made clear later.

Anatomical Structure.

A glance through the microscope at a bit of straw, however prepared, will show at once that the mass is made up of a large number of small units, each composed of a wall enclosing a space which may be either empty or contain the remnants of various substances which were important during the life of the plant. It is convenient to designate these units by the term cells, as originally used. (4)

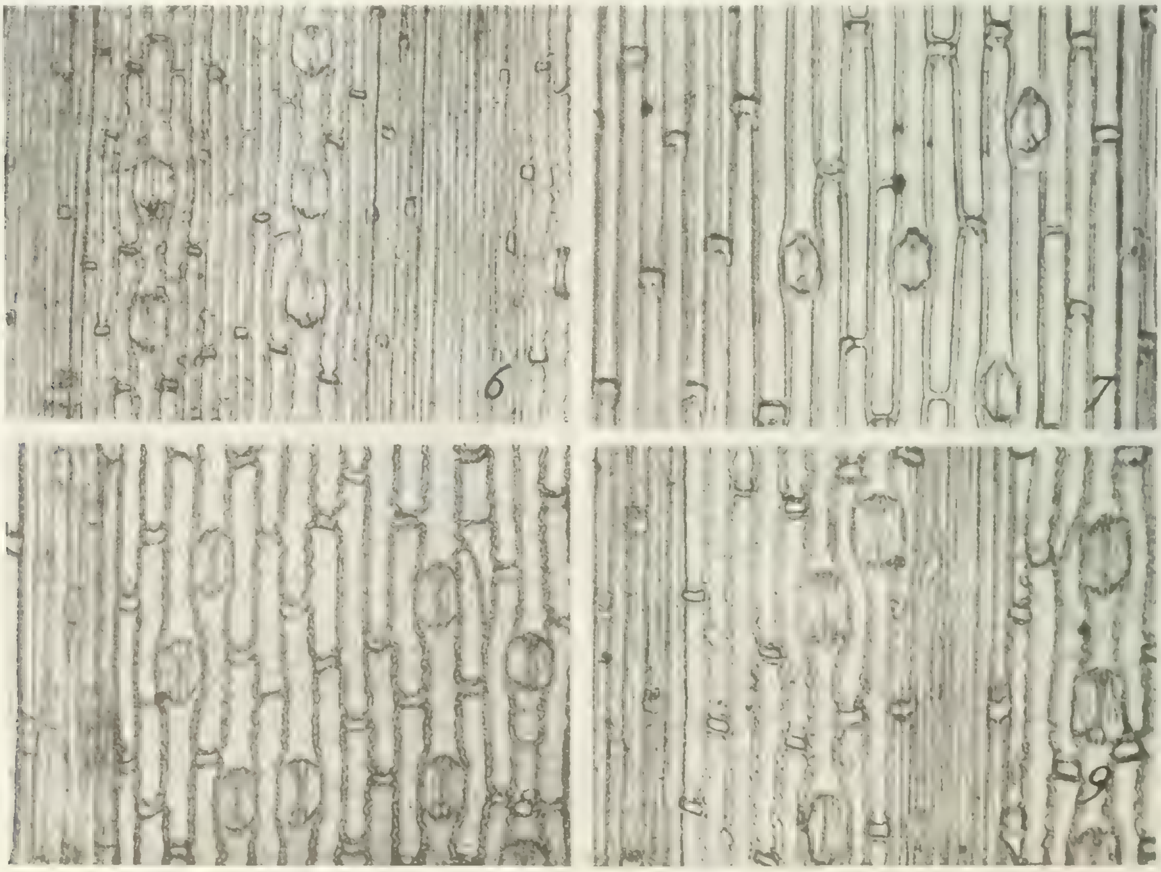
Structural groupings of cells of similar size and shape are called tissues. In the immediately following paragraphs the form and dispositions of the cells and tissues will be described. It will be convenient to begin by examining the structure of a stem as seen in transverse sections.

THE STEM.

If such a section is taken just above the node, where the stem is not hollow, the following structure will be seen (figure 3).

The section is nearly circular, and appears made up of a mass of round cells constituting the parenchyma, the largest in the middle, and grading in size toward the edge when they meet with a much denser lot of tissues. These are evidently arranged in groups of cells (the fibro-vascular bundles) of different sizes, between which the parenchyma extends toward the periphery of the section. There are apparently two, but strictly speaking more than two, circular series of fibro-vascular bundles, the inner of larger ones, and an outer of smaller ones, paced quite close to the surface of the stem. Between the bundles of the outer series the cells are very small, and as will be seen, make up a layer of fibers (bast). (*cf.*) figure 6).

Bounding the whole is a single layer of cells of small size and approximately quadrangular in transverse section constituting the epidermis. On comparing with a section (figure 4) from a somewhat higher level in the internode where the stem is hollow and where the tissue arrangement is best displayed, it will be seen that here the structure differs from that just at or above the node chiefly in the circumstance that the parenchyma in the middle has broken down thus leaving the space (fistula). At a still higher level it is seen that there may be an interruption of the dense mass of small-celled tissue just beneath the epidermis, by stretches occupied



Figures 6-9. — The epidermis viewed **en face** of the stem (upper part of a lower internode) of barley, oat, rye and wheat resp. × 174

by very thin walled and loosely arranged cells (the chlorenchyma) which, when the plant is alive, contain the green coloring matter (figure 5).

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(4) "Cell" was used by Robert Hooke in 1665 for the cavities seen in cork. The term has now a more fundamental significance, being applied to the living matter which, in plants, builds up a cellulose skeleton by which the form of the plant is maintained. There is no living matter present in "straw", which is merely the relatively indestructible skeleton of the erstwhile live plant.

If now a section running lengthwise the stem is examined, (figure 6), it will be seen at once that the appearance offered by the transverse section gives a totally inadequate conception of the shapes of the constituent cells, many important details not appearing at all, especially in such small objects as the grass stem, the total thickness of which is0.5 mm. or less in thicnness. However, by means of maceration (in chromic acid for example) the cells may be set free from each other and thus examined. With the additional help of this method we may examine each tissue in turn beginning with the epidermis.

THE EPIDERMIS (Figures 7-14).

Examined *en face* the epidermis is seen, in general, to be composed of longitudinal zones of more or less elongated cells with undulating walls overlying the green tissues beneath, alternating with narrower zones of similar but longer cells with straight walls, and with narrower lumina.

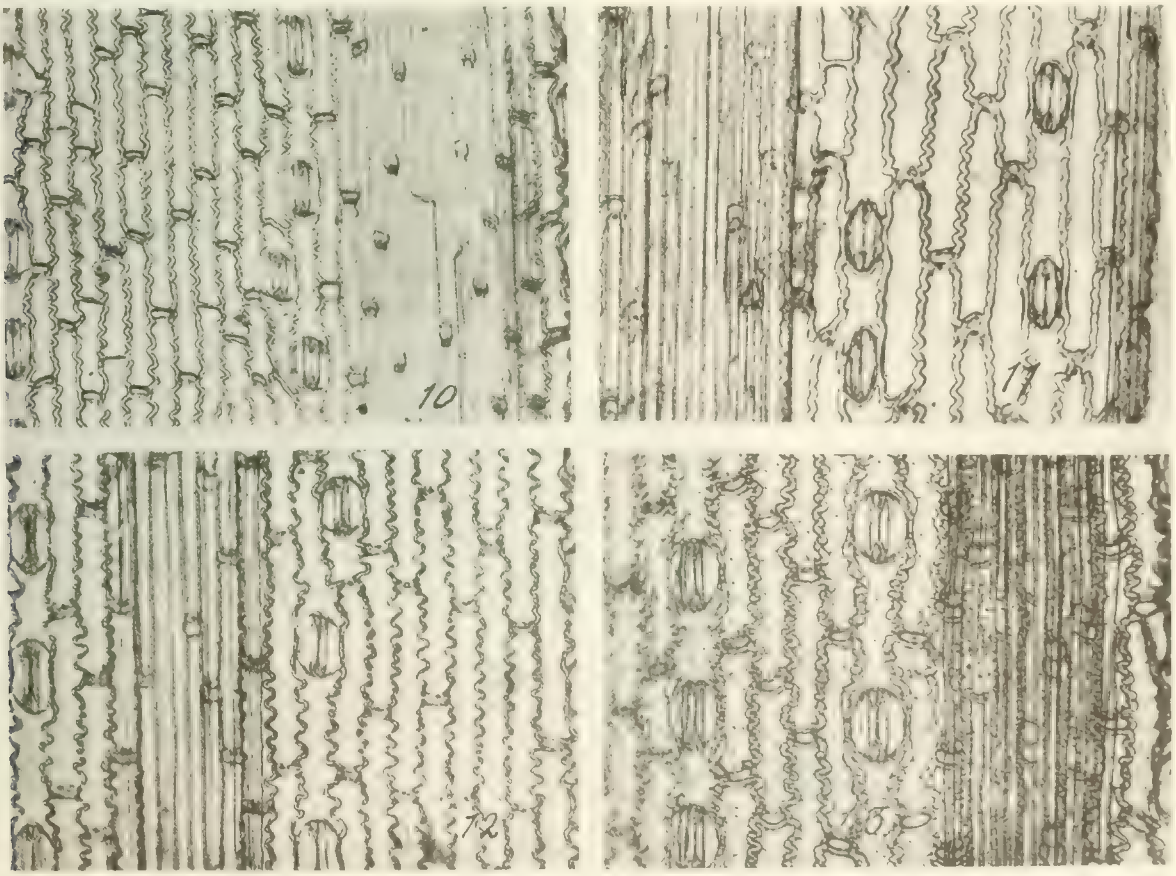
The long cells are interrupted frequently by the so called "dwarf-cells", which occur usually in pairs placed longitudinally, but may be either single, in threes or in fours. Of the pair, one cell is thin-walled and stains readily in the manner of the epidermal cells in general. This, when there is but one dwarf-cell in a position, is the cell which may assume the form of a trichome usually shaped like a cat's claw. The other is thicker walled, usually, and the walls are strongly silicified. Wiesner (1900) states that this is the case and Hoehnel (through Haberlandt, 1909, p. 105) represents them as single. Only one of the pair however, presents this character. The representation by Hoehnel seems to be referable to the circumstance that sometimes the cells in question are very small and sheared upon each other so that they can be resolved microscopically only in depth and not transversely (figure). In barley especially they are very small and difficult to resolve. In wheat however the silicified cell may be quite large relatively.

The long cells of the epidermis are interrupted also by groups of four cells forming the stemata. These are organs which are capable of forming openings through which gasses can pass into and out of the

These are organs which are capable of forming openings through which the air can pass into and out of the stem (figures 31a-d; 16). The four constituent cells are arranged in the grasses in a transverse row. The two adjacent ones, the "guard cells", are slender, and have a slit between them which opens and closes in life according to physiological conditions. The outer two cells are the accessory cells. The relations are best understood by examining a transverse section (figure 16).

Epidermis of the stem. The epidermis of the stem and of the leaf both present similar fundamental features as just described. They are, however, sufficiently different in details as to demand separate examination. (figures 7-10).

It is practically impossible to fit a single description to the epidermis of the stem for the reason that it shows marked differences in different portions of the internode. In the lower portion, the cell walls (in wheat, e.g.) are quite straight and thin, the dwarf cells are longer and very simple in structure. The stomata are few in number and less differentiated. In the upper portion, on the other hand, especially where the inter-



Figures 10-13. The epidermis viewed **en face** of the lower (outer) surface of the leaf sheath of barley, oat, rye and wheat resp. × 170.

node is not covered by the leaf-sheath, the cells have walls which are thick and undulating, and they occur in longitudinal zones alternating with zones of cells with straight walls. The dwarf cells are here strongly compressed longitudinally (figure15), and the stomata well developed. Indeed so much difference is there that it is difficult to recognize that one is dealing with the same stem. It will be readily understood that it becomes much more difficult to distinguish between different kinds of straws if only the epidermis from the lower portions of the internodes is regarded. Such characters as may enable one to make these and similar distinctions are found only in the upper part of the internodes.

Epidermis of the leaf (figures 11-14). In straw, in the ordinary commercial sense, the leaf blades are present in such small quantities as to be negligible. They are broken off in threshing and become as chaff. The leaf sheaths however are practically always adherent and form part and parcel of the straw and constitute a not inconsiderable proportion of straw paper pulp. The epidermis is moreover more evenly and fully developed throughout the whole length of the leaf-sheath. The longitudinal walls of the longer cells of the outer surface are thicker and usually strongly undulating, the dwarf cells may be developed into short protruding hairs (wheat) and are generally in twos (figures 10 and 14). The epidermis of the thin leaf margins and of the inner surface of the leaf-sheath is very thin, as are the walls of the cells. They are here also without undulations, and dwarf cells are relatively few. The relative amount of epidermis from the leaf-sheath as compared with that of the stem, together with its uniform character makes it an important means for the identification of the kind of straw, especially in the form of pulp.

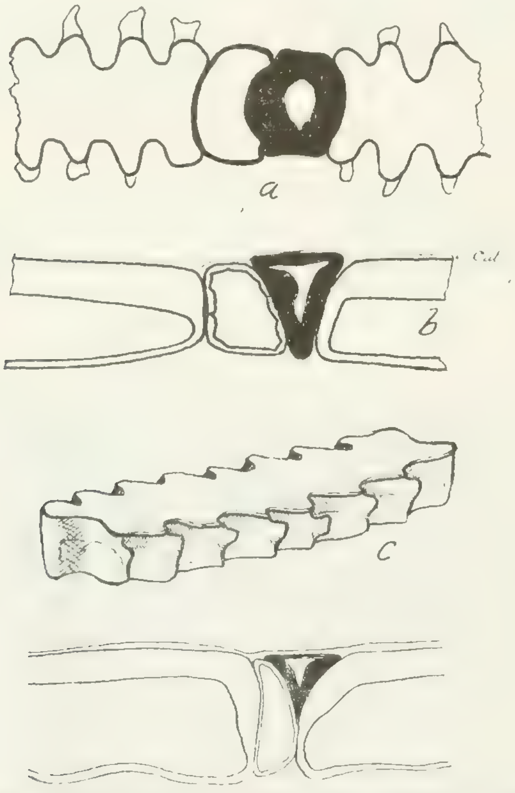


Fig. 14. — Diagrams of the dwarf cells and of an epidermal cell (wheat). **a**, dwarf cells, **en face**; **b**, lateral view; **cut**, cuticle; **c**, epidermal cell in perspective; **d**, dwarf cells of barley.

(To be continued.)

NEW CLUB HOUSE AT LA TUQUE.

The Brown Corporation have shown a wonderful example to manufacturers in the building of a club house at La Tuque. The erection of the building has recently been completed and we now await the day when the doors will be opened and the business of enjoying oneself may commence.

The plan of the building is in the form of a broad T of which the top stroke is the point 101 feet in breadth. A basement extends under the entire building and contains a swimming pool 20 x 60, bowling alleys, locker room, showers, lavatories, boiler room, etc. The walls and ceilings are all white and the rooms mechanically ventilated, so altogether this basement is, unlike most basements, attractive.

On the first floor level, at the vertical stroke of the T is the gymnasium, which has a stage at one end and a gallery surrounding the designed auditorium, which is primarily for spectators at basket ball games, but will be an asset on other occasions.

The front part of the building has three floors above the basement. On the first floor in the centre there is a spacious entrance hall with arches at each end leading to the billiard room and reading room, respectively. Behind these rooms on one side there is the ladies' room and on the other the boys' department. One of the features of the club is that the Boy's Department can be isolated from the rest of the club both on this first floor and in the basement where are the boys' locker room and showers, etc.

On the second floor there is a banquet room and three club rooms, which can be opened to form a large dancing hall when desired.

On the third floor is an apartment for the janitor and his family and seven bedrooms which will be occupied by visitors and perhaps some of the lucky bachelors employed by the company. Kitchen accommodation has been provided to supply the needs of the ladies' afternoon tea parties on the first floor and the banquet room on the second floor.

The exterior of the building is in red brick with white trimmings and conforms to the style of the well known Colonial house—a style admirably suited to the purposes of the building and its surroundings. The interior is beautifully finished, the woodwork in Canadian ash stained and waxed to a medium brown blending successfully with the harmonious tones of the rural tinting, which in itself will be an education to the members who have an idea about how their houses should be painted,

The Brown Corporation has realized the immense educational, physical and social opportunities which a club of this kind has to offer to a population which for five months in the year at least, is bounded on all sides by a wilderness which confines the amusements of the people to the immediate environment of their houses.

The late Philip D. Armour said responsibility could not be forced on anyone —he must assume it himself. There is a lot of truth in this statement. A successful executive does not wait for somebody to come along and force him to accept the responsibility of his position —he assumes it. A foreman who gets into the habit of waiting for someone "higher up" to point out to him what to do, and what not to do, will be a failure. A man who is afraid to go ahead and use his own judgment will never make a leader. — The Andersonian.

Specifications for Limestone and Lime for Sulphite*

1. GENERAL

(a) Manufacture of Sulphite Pulp.

The manufacture of pulp for paper making from wood, by means of the sulphite process, consists of the following operations:

(1) preparation of the wood,
(2) preparation of the cooking liquor,
(3) cooking of the wood,
(4) washing and screening the pulp,
(5) bleaching the pulp, and
(6) preparation of the finished pulp for shipment.

The use of limestone and lime in the manufacturing process occurs in the preparation of the cooking liquor. This liquor is produced by the reaction between sulphur dioxide and limestone or lime and the two absorption methods in common use are called the tower system and the tank system. The liquor is essentially a calcium or calcium and magnesium salt of sulphurous acid and its function is to affect the non-cellulose part of the wood in such a manner that, in the washing and bleaching process, nearly pure cellulose may be obtained.

(b) Use of Limestone or Dolomite in the Tower System.

The tower type of absorption system consists of one or more towers varying in height from 20 feet to 150 feet and charged with limestone or dolomite resting on gratings. A stream of water, with or without the addition of reclaimed liquor, trickles over this stone, while the sulphur dioxide enters at the bottom, rises and acts upon the moist stone and is absorbed by the downward flowing film of water.

(c) Use of Lime in the Tank System.

In the tank or milk of lime system, the base is in solution or suspension in a series of tanks, equipped with suitable agitators. The sulphur dioxide is forced or drawn through these tanks successively. In some cases, the tanks are built on top of each other in the form of a tower. The contents of the first tank are drawn off when the liquor has reached a certain strength (3.5 to 6 per cent total SO_2) and the contents of the second and third tanks progress to the first and second tanks respectively. The third tank is again charged with fresh milk of lime.

(d) Discussion of Use of Calcitic and Dolomitic Stone and Lime.

There is some difference of opinion in this country as to the relative merits of calcitic and dolomitic stone and lime for use in the two absorption systems. The difference in practice in the various pulp mills does not seem to be based on accurate data. As a result of a summary made during the war, the following conclusions may be drawn:

(1) In the tower system, calcite stone is desired, due principally to the fact that when dolomitic stone is used the calcium carbonate goes into solution first, causing the stone to crumble and leave a sludge. For this reason, in a tower system using dolomitic stone, it is necessary to have the grates raised 40 to 50 feet and they require frequent cleaning. One mill is using and recommends dolomitic stone. However, most of the mills are using a calcite stone and, in fact, several were using marble having a calcium carbonate content of 98.5 per cent. It cannot be said, however, that dolomitic stone cannot be used in the tower system, but it is not the most common practice.

(2) In the tank system, a lime high in magnesium is desired, due to the fact that the magnesium salts are soluble, while the calcium salts are not so soluble and have a tendency to clog the system. But due to variations in tank systems, it is probable that a calcitic lime would give good results in certain instances.

In view of the difference in practice in American pulp mills, as briefly outlined above, specifications are given for both kinds of stone and lime.

(e) Definitions.

Limestone consists essentially of calcium carbonate. Dolomite consists essentially of calcium and magnesium carbonates when the proportion of the latter does not exceed 45.5 per cent.

Quicklime is the product resulting from the calcination of limestone. It will slake when water is added to it and this slaking is accompanied by an evolution of heat and an increase in volume.

2. REQUIREMENTS.

(a) Quality.

The quality of the stone or lime should be reasonably uniform and in the case of the dolomitic stone or lime, the proportions of magnesium and calcium should be kept as nearly constant as possible.

(b) Composition.

In view of the fact that various systems may use different grades of stone or lime, the requirements of these specifications are so given that they will meet the conditions of the pulp mills in this country. The maximum and minimum quantities are given in the following table:

Ingredients	Calcite Stone		Dolomite Stone		Calcite Lime		Dolomite Lime	
	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
Calcium oxide	..	54.0	..	30.2	..	93.0	..	56.0
Magnesium oxide	1.5		.	18.8	2.5	.	..	37.0
Impurities	1.5	..	1.5	..	2.5	..	2.8	..
Organic matter ..	0.5	..	0.5	..	0.5	..	0.5	..

(c) Impurities.

The impurities present in a limestone or lime must be evenly distributed throughout the mass, and must not be concentrated in visible strata or nodules which would clog the grates.

(d) Packing.

Limestone is shipped in bulk in carload lots. Quicklime is shipped either in bulk or carload lots or barrels holding 180 pounds net or 280 pounds net each.

(e) Marking.

Each package, or each carload of bulk material, shall be legibly marked with the names of the consignor and consignee and with some means of identifying the particular contract on which the shipment is made.

3. SAMPLING AND TESTING.

(a) Sampling.

The purchaser will bear all expense of sampling and testing. When limestone or quicklime is shipped in bulk, the sample shall be so taken that it will represent an average of all parts of the shipment from top to bottom, and shall not contain a disproportionate share of the top and bottom layers, which are most subject to changes. The sample shall comprise at least 10 shovelfuls taken from different parts of the shipment.

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* These are tentative recommendations of the U. S. Bureau of Standards. Readers are asked to co-operate in this work by sending to the Editor any suggestions or criticisms.

The total sample taken shall weigh at least 100 pounds, and shall be crushed to pass a 1 inch ring, mixed thoroughly, and "quartered" to provide a 15-pound sample for the laboratory.

When quicklime is shipped in barrels, at least 3 per cent of the number of barrels shall be sampled. They shall be taken from various parts of the shipment, dumped, mixed, and sampled as specified in the above paragraph.

When sampling quicklime, it is essential that the operation be conducted as expeditiously as possible, in order to avoid undue exposure of the material to the air. The sample to be sent to the laboratory shall immediately be placed in an air tight container in which the unused portion shall be stored until the shipment has been finally accepted or rejected by the purchaser.

The sample may be taken either at the point of shipment or at the point of destination, as agreed upon by the contracting parties. If it is desired to take the sample at point of destination, due allowance must be made in order that the lime manufacturer shall not be penalized for the carbon dioxide absorbed in transit.

(b) Testing.

The following directions are a brief summary of the analytical methods which are recommended. For more complete information on this subject references should be made to The Analysis of Silicate and Carbonate Rocks, by W. F. Hillebrand, United States Geological Survey, Bulletin No. 700.

Blast 0.5 g. of the sample for 15 minutes in a platinum crucible. Cool and transfer to an evaporating dish. Mix to a slurry with distilled water. Add 5 to 10 cc. concentrated HCl. Heat gently until solution is complete, breaking up lumps if necessary. Evaporate to dryness on water bath. Add 5 to 10 cc. concentrated HCl, and dilute with an equal volume of distilled water. Digest on water bath for 10 minutes. Filter, and wash with hot water. Evaporate the filtrate to dryness. Dissolve in acid and water as before. Filter and wash with hot water. Ignite the two precipitates together, and weigh as silica and insoluble matter.

Dilute the above filtrate to 250 cc. Add HCl if necessary to insure a total volume of 10 to 15 cc. Make alkaline with NH_4OH. Boil until odor of NH_3 is barely noticeable. Filter, and wash slightly with hot water. Dissolve the precipitate with hot dilute HCl, and repeat the precipitation as before. Filter, and wash thoroughly, with hot water. Ignite, and weigh as oxides of iron and aluminum.

To the filtrates from the above add a few drops of NH_4OH and bring to a boil. Add 25 cc. of a saturated solution of $(NH_4)_2C_2O_4$. Continue boiling until the precipitate becomes granular. Let stand until precipitate settles clear. Filter, and wash with boiling water. Ignite the precipitate, dissolve in dilute HCl, and dilute to 100 cc. Add excess of NH_4OH, and boil. Filter out any insoluble matter, ignite and weigh, and add its weight to the oxides of iron and alumina found previously. To this filtrate, add $(NH_4)_2C_2O_4$, proceeding as before. Filter, and wash with boiling water. Ignite, and blast to constant weight as calcium oxide.

Acidify the filtrates from the above with HCl. Evaporate to 150 cc. Add 10 cc. of a saturated solution of $NaNH_4HPO_4$. Add NH_4OH drop by drop, with constant stirring, until the precipitates starts to form. Then add moderate excess of NH_4OH. Stir for several minutes. Let stand over night. Filter, and dissolve the precipitate in bot dilute HCl. Dilute to 100 cc., add 1 cc. of saturated solution of $NaNH_4HOP_4$, and precipitate as before. Filter, and wash with an alkaline solution made by diluting NH_4OH until it contains 2½ per cent of NH_3 and then adding a few drops of HNO_3. Ignite and weigh as $Mg_2P_2O_7$. Multiply this weight by 0.3621 to find the weight of MgO.

(c) Retesting.

Notice of the rejection of a shipment based on these specifications must be in the hands of the consignor within 10 days after the receipt of the shipment at the point of destination. If the consignor desires a retest, he shall notify the consignee within 5 days of receipt of the notice of rejection. The original testing laboratory shall keep the sample sealed air-tight from the time they have taken out enough material for the original test until the expiration of the 15 days noted. The original testing laboratory shall agree to transmit the sample to any one laboratory for a retest at the direction of both of the contracting parties. This retest shall be at the expense of the consigner.

SUCCESSFUL COURSE IN BOXING.

The industries of the country have responded to the practical course of instruction in Boxing and Crating at the Forest Products Laboratory to such an extent that at the end of the tenth course, July, 1921, 24 different industries in 46 cities had been represented; twelve firms had been represented by two or more men; two firms had sent men to three courses, and one firm had sent men to four courses.

On account of this response, it has been deemed advisable to announce dates for three courses in addition to the November course previously announced. The dates for the courses are as follows: November 7-12, 1921; January 9-14, 1922; March 6-11, 1922; May 1-6, 1922.

This course is essentially a practical demonstration of such points as the characteristics of different styles of boxes and crates, the importance of nailing, the advantages of using dense woods, the efficiency of metal straps, the effect of moisture and change of moisture conditions in lumber on the strength of boxes and crates, tests on wire bound boxes, methods of improving the design of fibre board boxes, and many other points of interest to the box and allied industries. The making of drum tests, drop tests, compression tests and various other kinds of tests can drive home the fundamental principles of container construction as can no amount of published reports.

NOT SO DULL AT THREE RIVERS.

The St. Maurice News-Chronicle says: The Wayagamack Pulp and Paper Co. employed last winter around 1.000 men. There are now employed 600 which will be shortly increased to 800, and an executive of the company states that the mill will run full force this winter the same as usual. An increased demand for kraft paper may result in even busier times than last year at this mill.

Lumbering.

Many of the big companies had decided not to cut this year but the Provincial Government in order to aid unemployment, has reduced the stumpage tax and, as a result, lumbering operations may ensue. Every effort is being made by the government to induce companies to cut this year.

EDWARDS' DEATH LOSS TO INDUSTRY.

(Special to the Pulp and Paper Magazine.)

The Canadian pulp, paper, and lumber industries lost one of their best friends and one of their most respected and influential representatives when Senator William Cameron Edwards, died at his home, 60 Sussex St., Ottawa, last Saturday morning. His funeral, attended by parliamentiarians, representatives of the pulp, paper, and lumber industries, and citizens of all walks of life took place on Monday afternoon.

With the pasing of Senator Edwards, Canada loses one of its pioneer lumbermen, a prominent figure in political and parliamentary life, a noted live stock breeder and a director of several important concerns.

The value of his association to the industry, made itself evident, when he began believing and preaching that Canada's forests and resources were not inexhaustible. Backing his faith in his doctrine he commenced reforestation on his own extensive limits. He was one of the pioneers of reforestation in Canada, and in addition to actual work of reforestation, he was a firm believer in the value of educational methods, along such lines.

The death of Senator Edwards came as a surprise to Ottawa, for though it had been known that he had been ailing for the last four or five years, it was not generally known that he had been confined to his home for upwards a month previous to his death, which was caused by arterio sclerosis.

Senator Edwards was born May 7th., 1844 at Clarence, Ont. On both sides he was of Celtic extraction. His father William Edwards, was Welsh, and his mother Anne Edwards nee Cameron was of good Scottish blood.

After going through the Ottawa Grammar School, his first field of endeavour was in the lumbering business, and his first earnings in this field came in 1863 at Thurso, Que. He was then attached to the pioneer lumbering firm of Cameron and Edwards, with which he remained for five years when he founded the business of W. C. Edwards and Company at Rockland. This company grew to be one of the greatest of its kind in Canada, and a year ago this summer passed to the Riordon Pulp and Paper Company, which on reorganization is known now as the Riordon Company Limited, of which the Senator was a director.

The transferring of the W. C. Edwards interests to those of the Riordon Company, were the principal holdings in a $60,000,000 merger which included the Ticonderoga Pulp and Paper Company, the Kipawa Company, Limited, Gilmour and Hughson, Hull, Que., and the W. C. Edwards Company. Prior to the sale the late Senator had disposed of his dominating interest in the firm and was a preferred stockholder when the deal was put through.

In a business capacity his interests were varied and many. Among the companies with which he was identfied with was the Canada Cement Company of which he was president, Ottawa Hull and Power and Manufacturing Co., the Bathurst Lumber Company, the Canadian Bank of Commerce and the Toronto General Trusts Corporation of which he was a director. He was also president of the Cascapedia Manufacturing and Trading Company, the Library Bureau of Canada, The Canadian Mahogany Company, the Sunplex Milling Co., and vice president of the Robinson Edwards Lumber Company of Burlington, Vermont.

During the many active years of his life, Senator Edwards was a leading official of the Central Canada Exhibition Association, the Canadian Association for the prevention of Tuberculosis, the Montreal Industrial Exhibition Association, the Canadian Association of Breeding, County of Carleton Hospital, International Commission on Bovine Tuberculosis, the United States River and Harbor Commission. In 1909 he was appointed a member of the Conservation Commission of Canada, and his presence on that body was an asset that made itself felt on many occasions. As an industrial promoter he was associated with the Temiskaming Steamboat Company, the Canada Lumber Company, the Consumers Electric Company, and in 1905 was elected president of the Quebec Limit Holders Association.

He entered politics as a liberal member for Russell County in 1882. On that occasion he was defeated, but sat for the same constituency from 1887 to 1903. He rapidly became one of the foremost members of parliament and was a very close friend of the late Sir Wilfrid Laurier. On March 17th., 1903 he was called to the Senate of Canada by Lord Minto.

In 1885 he married Catherine M., eldest daughter of the late William Wilson, who still survives him. He was a member of the Rideau Club, Country Club, Ottawa Hunt Club, Royal Ottawa Golf Club, the Garrison, Mount Royal, and St. James Clubs, Montreal, and of the York and Toronto clubs.—A.

A. P. & P. A. TO MEET IN CHICAGO.

The condition of the paper industry as seen by the manufacturer, the merchant and the consumer will feature the program of the annual Fall business conference at Chicago of the American Paper and Pulp Association and its score of affiliated manufacturers associations. One prominent representative of each group will be on the program.

"Paper Week" will be the week beginning October 31, with Thursday, Nov. 3 as the date of the meetings of the American association itself. The National Paper Trade Association has announced October 31 as the date of the meeting of the merchants and distributors, while the balance of the week will be devoted to meetings of the affiliated associations, most of which, like that of the National Paper Trade Association, and the American Paper and Pulp Association, will be held at the Drake Hotel.

In years gone by the meetings of the paper manufacturers have been held chiefly in New York. With the development of the industry in the Middle West, however, and the establishment of big paper manufacturing districts in the Miami valley of Ohio, the Kalamazoo district of Michigan and the Fox and Wisconsin valleys of Wisconsin, as well as in other sections, it has been decided to hold the Fall conference in Chicago. The first such conference was held last year, and was so successful that it will probably become an annual event.

Wisconsin now ranks third of all the states in the consumption of wood for its paper mills, and other states of the Middle West produce large quantities of fine papers and special grades. While the news print manufacturers, with mills on both sides of the Canadian boundary are not represented by any organization in the American association, several will be in attendance at the business conference.

PRICE BROS. DIVIDEND EQUALS 10 PER CENT.

Announcement is made from Quebec that the directors of Price Bros. & Co., Ltd., at their dividend meeting yesterday declared a dividend of one half of one per cent on outstanding $42,683,200 common stock. This is a reduction from three-quarters of one per cent previously paid or at the annual rate of 2 per cent against 3 per cent inaugurated after the recent reorganization of the company.

Taking into consideration the fact that the company, in the course of the reorganization last year, distributed five new shares for one of the old company the dividend inaugurated last year was at the equivalent of 15 per cent on the old and is now reduced to 10 per cent equivalent.

While no formal statement accompanies the dividend announcement the circumstances are fairly well understood in the street. The company is very largely interested in the lumbering industry in addition to its pulp and paper industry and the depressed condition of the former is well known. The company is understood to be carrying heavy inventories of lumber which it will be necessary to continue carrying until such time as there is a revival in demand.

TROPIC VEGETATION AS SOURCE OF MOTOR FUEL.

Alcohol suitable for fuel to be used for automobiles may be made from the moist vegetation of tropical forests and jungles, according to the view of Mr. H. N. Whitford of the Yale School of Forestry, who delivered a paper before the Cellulose Section of the American Chemical Society at the Rochester Meeting.

The speaker stated that alcohol could be produced satisfactorily from the stalks of many palms, that of the nipa in the Philippines being best adapted for its commercial production. From this source one distillery has actually produced 93 per cent alcohol at a cost of about 20 cents a gallon on a 12 hour basis. If run 24 hours, it is estimated that this distillery could produce alcohol at a cost of about 15 cents per gallon. The annual production of nipa alcohol in the Philippines is near to 3,000,000 gallons and only a small part of the area of the island is under production. To equal the equivalent of 5,000,000,000 gallons of alcohol produced in the United States in 1920 it would require an area of more than 50,000,000 square miles planted in nipa palms.

Other forms of tropical vegetation mentioned were wild grasses, cassaba, maize, rice, cotton and sugar cane.

BROWN CO. DECREASES WAGES.

The news that all the employees of the Brown Corporation will receive a decrease of 16 2-3 per cent (equivalent to the 50 per cent increase of last year) effective the week ending Sept. 14th, has for a long time been expected. The employees are accepting this quite cheerfully, realizing that the Brown Corporation were amongst the first to grant a very generous increase when prices were soaring and are now practically the last to decrease when such action became necessary.

It is pleasing to note that several tradesmen in La Tuque have already announced a reduction in their prices.

No one can neglect to do what he believes to be right without doing what he believes to be wrong.

U.S. BANS SMOKING IN STATE FORESTS.

Looking to the protection of pulp wood and other timber products, Secretary of Agriculture Wallace has forbidden smoking on the national forest lands within the cyclone swept area of the Olympic Peninsula, Wash.

The area covers some 540,000 acres, and was converted into a table fire trap by the cyclone of January 29, which swept the forests of the Olympic Peninsula by a wind estimated to have obtained a velocity of 150 miles an hour.

The devastation is the worst known in the history of the country. Nearly seven billion feet of timber, on a strip ninety miles long and from twenty to thirty miles wide was blown down by the storm and now lies in a tangled mass. Should a fire ever gain headway in this devastated area, foresters say that the most stupendous conflagration in the annals of the nation would result.

WOOD PULP AS A PSYCHOLOGICAL FOOD.

The Connecticut Agricultural Experiment Station report that they have examined a number of diabetic preparations, among which is an interesting product called Cellu Flour.

Cellu Flour is prepared by the Dietetic Cellulose Co., Chicago. It is a carbohydrate substitute made from purified and bleached wood pulp, straw pulp, or cotton fiber; it is white, tasteless, and non-nutritive, containing no starch, sugar, fat or protein; and is used for filling out reduced diets such as indicated in the Allen Treatment of diabetes. While it furnishes no nourishment it is said to satisfy hunger and reduces the tendency to over-eat. It might be called a psychological food.

The analysis of the flour is as follows: Moisture, 5·52 per cent; ash, 0·30 per cent; protein, none; fiber, 57·25 per cent; nitrogen-free extract, starch, none; Reducing sugars—Before hydrolysis, none; after hydrolysis, none; other nitrogen-free extract (modified celluloses), 36·93 per cent ether extract, trace.

By the conventional method of proximate analysis this material showed 57·25 per cent of crude fiber and a nitrogen-free extract of 36·93 per cent. It was found, however, that neither the acid nor the alkali digestates as obtained in the determination of crude fiber produced copper reducing substances and that therefore presumably little of the material thus removed is available for digestion but consists rather of soluble cellulose complexes of modifications.

A shipment of nearly two million feet of British Columbia fir, from Vancouver via the Panama Canal, arrived at Three Rivers recently. This is the first vessel, it is understood, to make the trip from British Columbia to Quebec ports via the Canal.

Announcement has been made that the University of New Brunswick has created a new chair in Forestry. Since the department was established some thirteen years ago there has been but one technical forester in the University. The demand for foresters has been so heavy in recent years that a second instructor has been appointed, and it is hoped that still further development will come in the near future.

The plant of the Nashwaak Pulp and Paper Company, which has been shut down for some months, has resumed operations. The mills give employment to about 400 hands and have an output of sixty tons of bleached sulphite pulp a day.

Technical Section

REVIEW OF RECENT LITERATURE

A-1. Use of French Colonial Woods for Paper Pulp. RAOUL MONMARSEN. **Papier**, xxiv, 64-6 (Feb. 1921). Brief analysis of the importance of utilizing the French Colonial woods for the manufacture of paper pulp and of the causes which have militated against their employment up to the present time. — A. P.-C.

A-1; G-0. Zinc Fluoride as a Preservative for Wood. R. NOWOTNY. **Oesterr. Chem. Zeit.**, xxiii, 136-8 (1920); **J. Soc. Chem. Ind.**, xl, 11A (Jan. 15, 1921). Tests on 15,763 telegraph poles extending over eight years show that zinc fluoride is a particularly suitable preservative, as it is soluble with difficulty and highly toxic to mold growths. The wood is soaked in a mixture of zinc chloride and sodium fluoride solutions, each of 1.75 percent concentration, and heated to 45 to 60° Cent. to form zinc fluoride or the basic fluoride. The total wastage of poles in eight years was only 6 percent (the loss for any one year never exceeding 1.82 percent) as compared with a total of 34 percent in the case of similar poles treated with copper sulphate. The best results are obtained when the timber absorbs about 3 kg. of zinc fluoride per cu. m. The chief drawbacks to the use of zinc fluoride, are the inconvenience of liquid zinc chloride in transport and the premature formation of the fluoride. The latter may be prevented by neutralizing the sodium fluoride solution by adding sulphuric acid or sodium bisulphate to it (the mixture must not react acid to methyl orange) prior to adding it to the zinc chloride. The use of zinc sulphate instead of zinc chloride (Renfer & Co. A.-G., Swiss patent No. 75,478 of 1917) is preferable. A satisfactory preservative may also be made by mixing powered zinc sulphate, sodium sulphate, and sodium bisulphate in suitable proportions and dissolving the mixture in water when required for use. The timber should be thoroughly dried prior to impregnation.—A. P.-C.

A-1. African Woods for Pulp. CLARENCE JAY WEST, **Paper**, xxvii, 24 (Feb. 16, 1921). Notes on the suitability of some West African softwoods (from Gambia, Sierra Leone, Gold Coast and Nigeria) for the production of pulp: **Adansonia digitata** (Baobab), cotton tree (**Eriodendron anfractuosum** and **Eriodendron orientale**), **Bombax buonopozense**, African maple (**Triplochiton johnsonii** and **Triplochiton nigericum**), **Sterculia barterii, Sterculia tomentosa, Sterculia rhinopetale, Sterculia tragacantha, Albizzias, Terminalia superba, Alstonia congensis, Ricinodendron heudeletti, Pycanthus kombo, Musanga smithii.**—A. P.-C.

A-1 & 15. Determination of Lignin. EMIL HEUSER, Translation by CLARENCE J. WEST. **Paper** xxvii, 23 (Feb. 9, 1921), 24, (Feb. 16, 1921). Critical review of Konig's Wilstatter's, Krull's and Konig and Rump's methods for the direct determination of lignin, and of Benedikt and Bamberger's (methyl number as methyl iodide), Cross, Bevan and Brigg's(by means of phloroglucinol), and Seidel-Hempel's (by means of nitric acid) methods for the indirect determination of lignin. A. P.-C.

A-16. Use of Aluminum Bronze in the Paper Industry. E. MESSMER. **Monit. Papeterie** lii, 18 (Jan. 1, 1921), 65-6 (Feb. 1, 1921). Aluminum bronze possesses a very high resistance to mechanical action and to chemical reagents, which renders it valuable in paper mills, especially for bedplate and beater roll bars in the manufacture of fine and semi-fine papers. Its merits are briefly discussed. -A. P.-C.

B-2. Production of Wood and Reforestation. CH. GROUD. **Papier**, xxiv (Feb. 1921). A very brief outline of production, importation and exportation of wood in various countries, and of the necessity of reforestation, both from the point of view of the wood-using industries and from a climatic point of view.— A. P.-C.

C-6. Saw Filing Gage. Can. patent No. 210,527. SAMUEL B. BROWN, Cairo, Illinois, U.S.A., April 19. 1921. Claims allowed 7.—A. P.-C.

C-6. Reciprocating Saw. Can. patent No. 211.547, ELIAS SAMUEL HOMSTAD, Redfield, South Dakota, U.S.A., May 17, 1921. Claims allowed 1.—A. P.-C.

C-6. Saw. Can. patent No. 211,578, LOUIS PHILIPPE MUNGER, Shawinigan Falls, P.Q., Canada, May 17, 1921. Claims allowed 6.—A. P.-C.

C-7. Barking Machine. Can. patent No. 211,529, per ALBERT FRESK, Robertsfors, Sweden, May 17, 1921. A toothed roller rests on the log to be barked and not only turns the log but also feeds it in the longitudal direction. The roller can also be positioned obliquely with respect to the log. The shaft that transmits motion to the roller is flexible and can yield to the turning movement of the roller spindle, so that the axis of the roller may be from a position substantially parallel to the axis of the log to a position substantially at right angles to it. One end of the flexible shaft is in a bushing journalled in a bearing which is rigid relatively to the rotating roller spindle, while the opposite end of the shaft is attached to a bushing journalled in a bearing carried by the rotating roller spindle. Claims allowed 5.—A. P.-C.

C-7. Attachment for Resawing Machines. Can patent No. 211,830, JOSEPH A. NEAL, Crichton, Ala., U.S.A., May 24, 1921. Claims allowed 12. A. P.-C.

D-4. Pulp Grinder. Can. patent No. 210,635, GEORGE JAMES MASON, Toronto, Ontario, Canada. April 19, 1921. In a pulp grinder, a grinding element formed of cement, sharp sand, and saw dust. Claims allowed 2.—A. P.-C.

F-0; K-6. Straw Pulp. Can. patent No. 210,770, JOHN BACHE-WIIG, assignee of a half interest, and CARL BACHE-WIIG, assignee of 70 per cent of the half interest, both of Portland, Maine, U.S.A., April 19, 1921. The process of preparing paper pulp material from strawlike substances containing ligneous matter which consists in heating the substances in the presence of a bleaching and softening agent of a strength too weak to injure the fiber, and to a temperature not exceeding 100° Cent. for a predetermined period of time not exceeding twenty-four hours, withdrawing the softening agent and washing the mass, digesting

(Continued on page 984).

British Trade News

(From our London Correspondent.)

London, September 5, 1921. — The financial statement of the Hartlepool Paper Mill was issued during the past week for the period February 1, 1920, to April 21, 1921. It shows that after deducting £33,826 for depreciation, £4,806 for maintenance and repairs to machinery and mill, and £12,500 for interim dividend there is a debit balance of £36,987. The mill is now fairly well supplied with orders and the Directors look forward with confidence to a considerable improvement in trade in the autumn. The new machine house is very nearly completed and it is hoped that the new machine will be running by the early part of 1922. This should largely increase output of the mill and reduce the cost of production. Negotiations which have been taking place for some considerable time past with reference to the contemplated amalgamation of the company with others have not matured.

Crisis in Norway.

Last week I made a short reference to labor troubles in Scandinavia and the news has now reached London that in Norway there is a crisis more serious than some people realize. The pulp and paper mills are concerned and the root of all the evil lies in the reduction of wages. Employees have been offered the old scale of wages revised, but they will not accept theem and their position is so critical that even negotiations with millowners are refused. There is now a strike which has thrown back the paper and pulp market during a state of revival and no orders are reaching the mills. Of late Norway has been a hot bed of discontent for labor agitators.

Commenting on August business the Norwegian Chamber of Commerce, in London, says: As regards new business August is generally a quiet month, and this year has been no exception to the rule. Most of the paper mills work only part time, but comparatively large shipments have been made under running contracts, as far as the Government will allow revaluation of existing stocks per August 31st for the purpose of taxation. For the few fresh inquiries going there is a very keen competition with greatly varying prices and Swedish shippers in spite of the state of their exchange as compared with the Norwegian, in most cases manage to make lower quotations than the Norwegian shippers. Very few orders go to Germany and Czecho-Slovakia, although their prices, as a rule, are still lower. It may probably be expeected that we may see more activity next month, more especially for business over next year, although small prompt quantities will certainly also be required over the rest of this year.

Troubles in the Printing Trade.

There is trouble in the British Printing Trade which may reflect seriously in the paper industry if some settlement is not soon arrived at. Notices have been posted in all printing works in the country, which may, or may not, result in a strike, concerning the reduction of $2.50 in wages per week and the workers may take it as a lock-out notice. The position is an unusual one and the Labor Ministry is intervening. Some of the workers say the reduction is too much, but the Master Printers think it fair.

Cropper & Co.'s Success.

At the 24th annual meeting of Cropper & Co., Ltd., the President, Mr. H. H. Killick, stated the company had surmounted the grave difficulties with which all industrial business has recently been faced. The industrial crisis had affected the paper trade very severely, but it was satisfactory to know that the Colthrop board and paper mill was able to distribute a dividend of 7½ per cent for the year ended May 31st last.

Paper Box and Bag Workers Unsettled.

The paper-box and paper-bag workers in the City of Birmingham held a meeting two days ago on the question of the proposed reduction of wages, which is also taking place in the paper industry, and it was decided to forward a resolution to the Trade Board protesting against any interference. Close upon 1,000 men and women are engaged in these sections of the printing bookbinding, machine-ruling and paper industry. It was explained to the meeting that the proposal to reduce the wages of qualified paper-box workers from 76s to 72s per week in the case of men and from 37s to 33s in that of women. It is also proposed to effect a similar reduction in the wages of women working in the paper box making trade and to make the following "cuts" in those of male workers over 23: — machine tacklers from 82s to 75s per week; cutters from 74s to 68s; pressers, slitters, etc., from 70s to 65s; general workers from 57s to 53s; and learners in proportion.

The Pulp Situation.

Groundwood has been inquired for lately and a little more life is shown in business transactions. On the sulphite and chemical side it may be said that the uncertainties of things in general just now leave the market quiet. Prices show a drop. The many deterrent factors telling against the paper industry which prevent it getting into a revived state, after the period of dullness, keep the supplies of chemical pulps from passing into consumers' hands more quickly. There is a dead and alive feeling and pulp men complain of it.

Prices in London are about as follows: — Bleached sulphite (No. 1) £22 7s 6d; Easy Bleaching (No. 1) £19; Sulphite newsprint quality £17; unbleached soda (No. 1) £20 15s; soda kraft £17 18s 6d; groundwood (wet) £5 prompt delivery, and dry £9 a ton.

Notelets.

Shipments of pulps from Canada are scarce just now.

The Germans and Scandinavians are stated to be offering chemical pulps at a slight reduction in price.

In the country of Kent, where the British hand-made paper industry exists, business is reported to be "good". This branch of the industry has had a most successful time since the beginning of the year.

Attempts are now being made in the United Kingdom to "cut" wages. It is contended that low wages and a reduction in the cost of raw materials are necessary for a revival of the trade in the United Kingdom — speaking generally.

The wood storage yards of the Neekoosa-Edwards Paper Company, Port Edwards, Wis., were completely wrecked by a fire recently. More than $120,000 worth of logs ready for the mill were destroyed and the total damage sustained is estimated at half a million dollars. Officials said that sparks from a locomotive owned by the company started the blaze.

Ideas are like pins; they should be picked up whereever seen and put to some practical use if there is any point to them.

The Pulp and Paper Trading Co., 21 East 40th St. New York has been appointed sole selling agents for coated lithograph and printing papers made by the Ware Coated Paper Company, Ware, Mass.

PULP AND PAPER NEWS

The Joint Council of Industry, according to an announcement made at Winnipeg, has issued a finding in regard to the job printers' dispute in so far as it applies to a certain number of Winnipeg firms who signed up with their employees for a forty-four hour week and agreed to submit the question of wages to arbitration. The award fixes the wages for the period beginning the 12th September, and ending the 30th June next, at 90 cents an hour. The finding is a reduction on the prevailing scale. The Joint Council suggests that its award be accepted as the basis for negotiations between the pressmen's and bookbinders' union and their employers. The award is acceptable to both the union printers and their employers who recognize the forty-four hour week. The dispute in the printing trade in Winnipeg has been on since the 1st July. A number of printing firms in the city have declared for an open shop, following on the refusal of the Typographical Union to submit the question of hours to arbitration.

It is likely that the striking printers will take a considerable part in the elections in Toronto. The Socialist leader, Mr. James Simpson, who has been a protagonist on the side of the printers ever since the inception of their strike, is to be a candidate, it is said, for one of the divisions of Toronto. Beyond this, it is inevitable that the question of the forty-four hour week will loom up during the election. And it is for the forty-four week that the printers are on strike at the moment.

Many of the job printing plants in Toronto are said to be closing down, by reason of lack of business. On the other hand, one hears of some plants of the kind that are extremely busy, just now.

In spite of the heavy decrease in the wages of men in pulpwood and lumber camps—these wages are in some cases about $25 or $30 a month, or less than a half of those paid last year—whenever there is a call for men to go into such camps, the concerns issuing the calls are literally inundated with applications. This shows how acute the unemployment situation is at the present time. Indeed, it is one which, at any rate in the larger centres, is causing grave apprehension as to the difficulty of getting through the next winter, particularly if this should chance to be long and severe.

In these columns, it has previously been pointed out that the cutting down of advertising in which practice so many firms have indulged during this period of depression, and which has reacted so detrimentally on the paper industry, is one of the most falsely economical practices that can be conceived. In a talk which the writer had the other day with one of the very largest manufacturers in Toronto, the latter was most emphatic in his confirmation of this view as absolutely and unequivocally correct. "Plenty of Canadians business houses," he said, during the period of booming prosperity, advertised enormously at a time when orders were coming in practically of their own accord. Now when orders are hard to get, they are cutting down their advertising. In so doing, they are letting up on their salesmanship and grouching about bad times. They will bitterly rue their adoption of a policy of such patently false economy."

The Hon. W. E. Raney, Attorney General of Ontario, took occasion, last week, to defend what is known as the "Backus deal" — a subject which continues to evoke a good deal of discussion in Ontario. After sketching the steps which led up to the purchase by Mr. W. E. Backus, of the area of timber limits in controversy, Mr. Raney said that complications had set in when Mr. Backus discovered that the Lake of the Woods limit did not contain sufficient pulpwood to supply the mill he had contracted to erect at Kenora, Ont., for the term of his lease, and when notification was received from the International Joint Commission on Waterways, restricting his area of the Northern Dam for the generation of power. "This was the situation," he went on, "when the present Government came into power. It promptly notified Mr. Backus that he must either keep his contract or suffer the cancellation of his lease of the Lake of the Woods pulpwood area. He answered by urging the difficulties I have referred to, and by asking three things: the renewal of the lease of the Lake of the Woods limit, the grant of a waterpower to operate the mills which he would build, the addition of a further area of pulpwood lands to ensure a supply of pulpwood for the term of his lease. In the alternative, Mr. Backus offered to surrender the lease of the Lake of the Woods limit." Then Kenora town, which was naturally, vitally interested, took a hand in the negotiations, and made an agreement with Mr. Backus, which was ratified by ninety-five per cent. of the ratepayers who voted on it. "What has been given to Mr. Backus," said Mr. Raney, "is the right to spend his money to develop the White Dog Rapids' waterpower, subject to absolute control of the Government."

A bonus to the striking Toronto printers, in the shape of their winter's supply of fuel, will be given by the Local Typographical Union, if the strike is not settled within the next four weeks.

TO RECEIVE SAGUENAY STOCK.

A circular has been issued by the Guaranty Trust Co. of New York to shareholders of the North American Pulp and Paper Companies' Trust, stating that the option granted to the trustees in dissolution of the latter corporation to dispose of the Saguenay Pulp and Power Co. stock has not been availed of, and that the certificates of deposit for common stock of the North American Trust are now exchangeable for the proportionate amount of preferred and common stock of the Saguenay Pulp and Power Company, each of a par value of $5 per share on the basis of 2 2-5 shares of preferred and eight shares of common for each ten shares of North American common. The option to dispose of Saguenay expired on August 15, and in view of this fact there was nothing for the trustees having in hand the dissolution of the trust to do, but to issue Saguenay stock for the certificates of deposit for North American comon stock held by the Guaranty Trust Company. The circular adds that holders of certificates may receive cash in lieu of the Saguenay stock at the rate of $3 per share for both preferred and common.

VOLUME COMPOSITION.

By PAPER EXPERT.

The presence of china clay in paper influences directly two important properties—strength and volume composition. This is at once illustrated by the extreme case of an imitation art paper in which the aim of the paper maker is to get a maximum percentage of mineral matter in order to produce the required result of a high finish to a cheap paper. The lack of strength and of resistance to rough usage is an inevitable accompaniment and a necessary limitation to this class of product, being well known to all users and printers.

The proportion of clay in paper may vary from 6 to 8 per cent., usual in cheap news, to 30 or 32 per cent., which obtains in thin imitation art. The actual thickness of paper is not increased by this excessive addition of clay to anything like this ratio, for the mineral first fills up the air spaces between the fibres before its influence is felt on the external surfaces of the sheet.

The physical properties of an imitation art can be appreciated by a study of what is known as "volume composition." Just as it is possible to determine exactly what is the percentage of clay in terms of weight if portion of a sheet of paper in terms of volume is occupied by clay. That is to say if a paper contains 30 per cent. by weight of clay what is the actual amount of space filled up with the china clay in comparison with the fibre?

The question of volume composition was first discussed in a booklet entitled, "The C. B. S. Units," and a more complete explanation of the subject in simpler terms appears in Sindall's Paper Technology. A sheet of paper has definite dimensions, length, width and thickness. It therefore possesses a corresponding "volume", and definite proportions of that volume are filled with fibre, mineral matter, sizing and other ingredients respectively. But however dense and close the sheet may be rolled or calendered, a certain proportion of the volume is air space. China clay exercises an important function in certain papers by filling up that air space more or less.

The case may be studied most readily by means of an example. What is the composition by volume of an imitation art paper having the following composition by weight?

Loading, 30 p.c. Fibre, 70 p.c.

For the measurement of volume composition, other physical properties are required thus:—

Substance: Grams per square metre, 85. Thickness: One sheet, millimeters, .089.

The first calculation is to find the weight of paper, loading and fibre in terms of grams per cubic centimeter.

Paper.

$$1{,}000 \text{ mm.} \times 1{,}000 \text{ mm.} \times t \text{ mm.} = 85.$$

$$\text{then } 100 \times 100 \times \frac{t}{10} \text{ cubic centimeters} = 85.$$

$$\text{weight per cc.} = \frac{85}{1{,}000t} = \frac{85}{89} = 0.95 \text{ gms.}$$

Ash.

Of the actual weight, 0.95 grams, ash or loading is 30%, namely, 0.285 grams.

Fibre.

The weight of one cubic centimeter of paper is 0.95 grams, of which 0.285 grams is china clay, leaving 0.665 grams as the weight of fibre in the unit volume (one cc.).

The ascertained facts are:—

Paper .. .. .. 0.950 gms. per cubic centimeter.
Fibre .. .. .. 0.665 " " " "
Ash (loading) 0.285 " " " "

The second step in the calculation is to determine the volume occupied by the quantities of fibre and clay above set out.

The volume of each ingredient is determined by taking into account the specific gravity, and calculating from the well-known relation.

Sp. Gr. = Weight ÷ Volume

The specific gravity of cellulose, or fibre, is taken at 1.50, this being sufficiently accurate for practical purposes. Hence, in the above formula, substituting the figures we get

$$1.5 = .665 \div \text{volume},$$

$$\text{or volume} = .665 \div 1.5 = 0.44 \text{ cc.}$$

The specific gravity of china clay varies within small limits and may be taken here as 2.5. Then in the same way we get

$$2.5 = 0.285 \div \text{volume}.$$

$$\text{volume} = .285 \div 2.5 = 0.114 \text{ cc.}$$

Since the one cubic centimetre of paper only contains fibre and china clay it follows that the balance of volume still over is simply air space,

$$\text{viz., } 1.00 - (0.44 + 0.114) = 0.446 \text{ cc.}$$

Expressing the final result as a percentage, the volume composition of this paper is

Fibre, 44.0; china clay, 11.4; air space, 44.6;
Total, 100.0.

Sindall gives the following formulae for calculating the volume composition, and these are presented in a form which reduces the calculations necessary to a minimum.

Measurements.

Weight of paper in grams per sq. meter .. .. .. G
Thickness of paper in millimeters .. .. t
Percentage of mineral loading (say clay) .. .. .. m
Percentage of gelatine (tub-sized papers) .. .. g

Calculations (for grams per cubic centimeter).

Weight of one cc. of paper = S = G ÷ 1,000t
Weight of one cc. of clay = A = Sm ÷ 100
Weight of one cc. of gelatine = T = Sg ÷ 100
Weight of one cc. of fibre = S — (A + T).

Volume Composition.

Fibre .. .. = 100 F ÷ 1.5
Clay .. .. = 100 A ÷ 2.5
Gelatine .. .. .. = 100 T ÷ 1.35
Air Space = 100 — (Fibre + Clay + Gelatine).

As a striking contrast to an imitation art showing only 44-45% of air space may be mentioned a bulky "antique" book paper made of esparto, without any mineral matter, having an air space of nearly 70%. It is not surprising that both classes of paper are incapable of resisting much wear and tear, the one on account of a high percentage of china clay and the other on account of an excess of air spaces.

—China Clay Trade Review.

No man loses by being true to his convictions. He may not be popular but what does that amount to?

Every man should keep a fair-sized cemetery in which to bury the faults of his friends.—Henry Ward Beecher.

UNITED STATES NOTES

Carl Young, Commissioner of Labor for Michigan State, has started an accident prevention campaign in which he is being backed by the compensation insurable companies and the manufacturers of the state. A conference between state officials and representatives of the Michigan Manufacturers' Association will signalize the opening of the safety campaign. Commissioner Young wants to bring preventable accidents down to an irreducible minimum. He points out that while the initial cost of completely safeguarding machinery is sometimes a little high, inspections by the state department will compel all employers to safeguard unprotected machinery and if the safeguards are not added to new equipment they will have to be added at considerable expense.

The Oregon Pulp and Paper Company has under way the construction of a dam across the North Mill Creek just above its plant near Salem, Ore. Upon the completion of the dam, a new power-house will be erected.

Charters to operate mills in the village of Bellows Falls, Vermont, were given last week to newly formed concerns, the Babbitt-Kelley Paper Company with a capital stock of $100,000, and the Robertson Paper Company, Inc., capitalized at $200,000. F. H. Babbitt E. W. and H. T. Kelley of Bellows Falls are named as incorporators of the Babbitt-Kelley Company, and the names of Joseph E. Babbitt and F. H. Babbitt are signed to the papers of the Robertson Company.

Beaters, fourdrinier wires, dyes for paper, and a particularly fine display of temperature and other recording instruments for the paper mill were among the items of interest to paper manufacturers exhibited last week at the sixth annual exposition of Chemical Industries in New York City. Registration of distinguished visitors showed that more than five hundred notables in science and industry in foreign countries attended. Of these nearly 400 were English and Canadian chemists. 50,000 persons visited the exposition hall during the week and an unusual feature was the attendance of a large number of persons not versed in chemical technicalities.

Paul Jouanneau, of Vendome, France, who is associated with his father in the paper manufacturing firm of Vaissier, Caron & Co., is returning to France this week following an inspection tour of American paper mills that has taken him to nearly all parts of the United States and Canada. Mr. Jouanneau makes the following observations regarding the American industry: "I have been very much interested in the mills I have visited. Your mills are very much different than ours. In France we have no fast machines, the fastest being 400 feet, while some in America run 1,000 feet a minute. The American mills are comparatively new, are larger and much better than any of ours. My father's mill was making paper 400 years ago. In France we have very few mills with three machines and may have less. The low duty on German paper has resulted in many of our mills being shut down. Unless a duty is placed on paper that will keep German paper out of our market our mills will all have to shut down."

As the outcome of a recent conference in Albany of the officers of the various international brotherhoods and local delegates representing all organizations involved in the present controversy with the International Paper Company, a resolution was passed favoring a settlement of the dispute on the basis of a union shop agreement, a wage scale similar with the award of the arbitration board and the continuance of the working conditions effective in mills prior to May 1. While there was no representative of the International Paper Company present at the conference, the meeting was understood to have been held at the instigation of a third party acting as mediator in an effort to bring about an adjustment of present difficulties.

Reports from various centers in Michigan indicate that business in the board mills is becoming brisker. September began with every board manufacturer in the Kalamazoo district operating his plant. While there is no indication just now of an immediate rush of orders, executives generally are hoping to get enough business to keep their organizations busy during the winter months. With plants running generally at or near full capacity there is even room for new plants as is evidenced by the completion of the Monroe Paper Products Company's mill and the booking by this concern of a fine lot of first orders.

Indications of the business depression are still evident, however, in other branches of the paper industry in Michigan. While the Western Board and Paper Company declared a dividend of 3 per cent September 1, the first for the ensuing year, many other Michigan corporations have either passed or reduced their usual dividend payments this fall.

The Technical Association of the Pulp and Paper Industry now has quarters in the general offices of the American Paper and Pulp Association, 18 East Forty-first street, New York City. Among recent changes and transfers of grades is announced that of C. W. Whitehouse, sulphite superintendent of the Abitibi Power and Paper Company, who has been transferred by the executive committee upon his application from the grade of associate member to that of active member.

WHAT IS A JOB?

A job indicates some service, a position means pay. A steady job is man's best friend. Is sends a man to sleep at night without anxiety as to how he will land or where he will land without work.

A steady job pays a man while he is improving his ability to earn more and hold down a good position. Moving out of one job into another job is sometimes necessary, but more often it is an evidence that you are a drifter and not a doer.

An etxra number of stripes on your sleeve is pretty good proof that you are dependable, and a dependable man is truly an important asset in any organization.

Leaving one job and waiting to find another is the biggest speculation on the market today. Good jobs are hard to find now, for where there is a good job, there are many applicants. My suggestion is, stick to your job. — **Exchange.**

(Continued from page 981).

the mass in sulphate liquor at a temperature not exceeding 160 Cent. for a period of time not exceeding ten hours, injecting into the mass a solution of sodium chloride at from two to five hours after the beginning of the digestion, draining off the liquor, washing the mass, and grinding it in a kollergang to form a pulp. Claims allowed 11.—A. P.-C.

E-5. Chemistry of Sulphite Cooking. A. CHAMBOVET. **Papeterie**, xl, 14-9 (May 25, 1919), 65-73 (June 10, 1919), 110-4 (June 25, 1919), 151-9 (July 10, 1919), 186-90 (July 25, 1919); xlii, 242-7 (March 25, 1920), 294-6 (April 10, 1920); **Paper,** xxvii, 21, (Jan. 26, 1921), 22 (Feb. 2, 1921), 23 (Feb. 9, 1921), 24 (Feb. 16, 1921). See **Pulp and Paper**, xvii, 736, E-5 (Aug. 28, 1919); xviii, 1145, E-5 (Nov. 4, 1920).—A. P.-C.

H-4. Electrolytic Cell. Can. patent No. 211,543. JOHN HARRIS, Lakewood, Ohio, U.S.A., May 17, 1921. Claims allowed 10.—A. P.-C.

H-4. Electrolytic Apparatus. Can. patent No. 211,564, ISAAC HARRIS LEVIN, New York, N.Y., U.S.A., May 17, 1921. Claims allowed 10. Also Can. patent No. 211,565, Claims allowed 5. Also Can. patent No. 211,566, claims allowed 6. Also Can. patent No. 211,567, claims allowed 7. Also Can. patent No. 211,568, claims allowed 7. Also Can. patent No. 211,569, claims allowed 5. Also Can. patent No. 211,570, claims allowed 14.—A. P.-C.

H-4. Electrolytic Cell. Can. patent No. 211,901, THE CHLORINE PRODUCTS Company, assignee of WILLIAM MARSHALL JEWELL, both of Chicago, Ill., U.S.A., May 24, 1921. Claims allowed 27.—A. P.-C.

H-4. Electrolytic Cell. Can. patent No. 211,902, THE CHLORINE PRODUCTS COMPANY, assignee of OMAR HESTREN JEWELL, both of Chicago, Ill., U.S.A., May 24, 1921. Claims allowed 17.—A. P.-C.

H-0. Electrolytic Cells in the Paper Industry. Anon. **Papeterie, xliii** (Feb. 25, 1921). Brief outline of the extent to which electrolytic chlorine and caustic soda are used in the pulp and paper industry in Europe. Their use in France is not likely to develop at present, as the French market is already overstocked with chlorine, and if the paper mills were to prepare their caustic electrolytically they would probably experience difficulty in disposing of the excess chlorine thus produced.—A. P.-C.

K-6 & 0. Groundwood and Waste Papers in the Manufacture of Paper. E. ARNOULD. **Papier**, xxiv, 48-50 (Feb. 1921). In the manufacture of the commoner grades of paper, where volume of production is the primary consideration and quality is of secondary importance, the main thing is to have equipment having a large capacity, so as not to risk holding up the paper machines. Pulpers like the Schreder, Dietrich, Wurster, Van Hemelrick, Lannoye, etc., are fairly satisfactory for this class of work, though they are really kneaders, rather than crushers; and kollergangs also give fairly satisfactory results, though they work by kneading the pulp and rubbing the fibers against one another. But for the manufacture of fine and semi-fine papers, such as writing, book, wallpaper, etc., a much more regular and uniform surface and a finer grain are required. The use of groundwood pulp in these papers is permissible only in so far as it does not detract from the appearance of the paper, and is used to lower the cost of production and as a filler to increase the opacity, but should not affect the quality of the product. With the pulpers named or with kollergangs, the shives are not eliminated and show up in the finished paper. A satisfactory equipment devised for this kind of work consists in a beater in which there is one or two large drums with blades, each of them working in conjunction with a much smaller drum. The shredding effect of this combination is very much greater than in the ordinary beater, and the machine is really a combination shredder and beater which can also be used as a bleacher and washer for the pulp. (Fr. patent No. 499,318, **Le Nord Africain**, Nov. 15, 1919; **Le Papier**, xxiii, 80-1, April 1920). The only really satisfactory crusher, yet devised for the preparation of mechanical pulp for the manufacture of fine papers, is an edge runner equipped with scrapers which bring the pulp (containing only 25 percent of moisture) into the middle of the course, so that it is really crushed between the rollers and the course. The output is barely half of that of the usual edge runners, and it is not as easy to operate; but it works up the stock exactly in the manner desired, without excessive hydration, which is one of the faults with the ordinary forms of kollergangs.—A. P.-C.

K-7. Hydration of Sulphite and Esparto Pulps. Papeterie, xliii, 146-9 (Feb. 25, 1921). Sulphite, especially when prepared by cooking at a low temperature with a weak acid, hydrates very readily in the heater, because of the presence of hemicelluloses. This is quite desirable for parchment or greaseproof papers, but must be avoided in the manufacture of print or writing papers. Esparto pulp, being a soda pulp, does not easily hydrate, and may advantageously be mixed with sulphite to reduce the tendency of the latter to hydrate, and may advantageously be mixed with sulphite to reduce the tendency of the latter to hydrate too readily. Moreover, esparto gives suppleness and bulk to the paper and makes it take the ink particularly well even under moderate pressure, which is especially important for lithographic work.—A. P.-C.

K-10. Sizing Composition. Can. patent No. 211,234, THE CORNELL WOOD PRODUCTS COMPANY, Chicago, Ill., assignee of FREELAND JOHN MORRISON, Cornell, Wis., both in the U.S.A., May 3, 1921. A sizing composition comprising 3 to 15 percent of sodium silicate, 1 to 7 percent of an organic adhesive, 1 to 8 percent of a filler, and water. Claims allowed 2. —A. P.-C.

K-12. Self-clearing Silencer for Paper Machines. Can. patent No. 211,964, WILLIAM E. STEWARD and THEODORE STOUGHTON, assignee of a half interest, both of South Glen Falls, N.Y., U.S.A., May 24, 1921. Claims allowed 7.—A. P.-C.

K-12. Electric Drives in Paper Mills. Publications Techniques. iii, 33-44, (June, July, August, 1920). Brief discussion of the advantages of the electric drive in paper mills, with a fairly detailed description of the Leonard system of electric drive for paper machines. —A. P.-C.

K-18. Plaster Board Composition. Can. patent No. 210,289, EUSEBE FOISY, Montreal, P.Q., Canada, April 12, 1921. A composition consisting of pure water, cubic foot; unslaked lime, 9 lb., and wood shavings (from planer), 2 lb. Claim allowed 1.—A. P.-C.

K-18. Fiber Board from Wood Bark. Can. patent No. 210,345, CARL GEBHARD MUENCH, St. Paul, Minnesota, U.S.A., April 12, 1921. Waste bark material is mixed with 9 parts of water, is reduced to pieces of a substantially uniform size, which are then shredded and disintegrated into a mixture of outer bark scale material and several classes of fibers. The pulp is then screened and formed into a sheet, along with woodpulp tailings if desired. Claims allowed 9. —A. P.-C.

K-18. Fiber Board. Can. patent No. 210,369, JOHN K. SHAW, Minneapolis, Minnesota, U.S.A., April 12, 1921. Claims allowed 17. Also Can. patent No. 210,-370, a fiber board composed of different layers of different kinds of fibers interlaced with each other, one of the layers being composed of waterproofed fibers, while another of the layers is composed of fireproof fibers. Claims allowed 7. Also Can. patent No. 210,-371. Claims allowed 8. A. P.-C.

K-18. Manufacture of Wallboard. Can. patent No. 211,608, JOSEPH VENIER, Belmont, Man., Canada, May 17, 1921. A plaster board comprising layers of intimately mixed and moistened hard wall plaster and sawdust united while plastic with an intermediate layer of burlap and external finishing layers of plaster. Claims allowed 2.—A. P.-C.

K-18. Composition for Sheeting. Can. patent No. 211,879, JAMES HARCOURT WETHERALL, Prince Hill, Victoria, Australia, May 24. 1921. The material consists of disintegrated paper (30 to 50 percent) a cereal substance such as flour in a pulpous condition (65 to 45 percent), and a binding agent with or without a powdered filling of mineral or vegetable matter (5 percent). Claims allowed 6.—A. P.-C.

K-19. Use of Casein for Coating Paper. R. MILLER. **Papeterie,** xliii, 157-8 (Feb. 25, 1921). Though casein gives fairly good results it is not as satisfactory as gelatin, as it is more prone to putrefaction and must be prepared a relatively short time before use (less then forty-eight hours in summer). The addition of formaldehyde as a preservative has the disadvantage of thickening it and prevents it from working properly. Miller has found by personal experience extending over forty-seven years that borax and ammonia (10 percent of either) are the most satisfactory solvents and prefers borax to ammonia (10 percent of either) are the most satisfactory solvents and prefers borax to ammonia. But when the casein is to be mixed with substances having an acid reaction, it is well to add a slight excess of ammonia to prevent the casein from thickening. Foaming in the sizing tub can very readily be prevented by the addition of a little milk or oil of turpentine to the coating solution, or by allowing amyl acetate to drop slowly on the surface of the solution.

K-21. Composition Roofing. Can. patent No. 210,-448, THE ROOFING PATENTS COMPANY, Buffalo, New York, assignee of ALEXANDER S. SPEER, Chicago, Illinois, both in the U.S.A., April, 1921. Claims allowed 8. Also Can. patent No. 210,449. Claims allowed 2. Also Can. patent No. 210,450. Claim allowed 1. Also Can. patent No. 210,452. Claims allowed 10. Also Can. patent No. 210,453. Claims allowed 8.—A. P.-C.

K-21. Apparatus for Cutting Roofing Sheets. Can. patent No. 211,666, THE ROOFING PATENTS COMPANY, Buffalo, N.Y., assignee of ALEXANDER S. SPEER, Chicago, Ill., both in the U.S.A., May 17, 1921. Claims allowed 7.—A. P.-C.

K-21. Method of Making Shingles. Can. patent No. 211,667, THE ROOFING PATENTS COMPANY, Buffalo, N.Y., assignee of A. S. SPEER, Chicago, Ill., both in the U.S.A., May 17, 1921. Claim allowed 1. Also Can. patent No. 21,668, claims allowed 3. Also Can. patent No. 211,669, claim allowed 1.—A. P.-C.

K-21. Roofing Material Manufacture. Can. patent No. 211,895, THE C. F. BURGESS LABORATORIES, assignee of HOWARD F. WEISS, both of Madison, Wis., U.S.A., May 24, 1921. Fibrous material is shredded in air and the shredded material is deposited on a support to form a layer of the desired thickness. The layer is then subjected to the action of an air current to mat the fibers together; and the mat thus produced is passed through pressure rolls into a bath of an appropriate saturant and compressed, and a weather-resistant coating is applied to one of the surfaces of the saturated and compressed mat. Claims allowed 18 A. P. C.

K-23. Method of Stone Surfacing Fibrous Materials. Can. patent No. 210,457, THE UNIVERSAL METAL LATH AND PATENT COMPANY, Jersey City, New Jersey, assignee of WILLIAM C. CORYELL, Youngstown, Ohio, both in the U. S. A., April 12, 1921. A method of waterproofing and fireproofing relatively porous sheet materials having an oily combustible base which consists in first rubbing a dust of waterproofing substance into the interstices of the relatively porous base, and subsequently applying a coating of liquid artificial stone compound to the dust impregnated base. Claims allowed 6.—A. P.-C.

K-23. Non-absorbent Fibrous Material. Can. patent No. 211,427, THE CORNELL WOOD PRODUCTS COMPANY, Chicago, Illinois, assignee of FREELAND JOHN MORRISON, Cornell, Wisconsin, both in the U.S.A., May 10, 1921. The process of impregnating fibrous or absorbent material consisting in coating the same with a solution containing 3 to 15 percent by weight of noncrystalline inorganic material, 1 to 7 percent of an organic adhesive, and 1 to 8 percent of a filler, and subsequently compressing the material Claims allowed 3.—A. P.-C.

K-23. Paper Towel. Can. patent No. 211,717, CONRAD M. CONRADSON and PRENTICE CONRADSON, co-inventors, both of Madison, Wis., U.S.A., May 24, 1921. As a new article of manufacture, a paper sheet having its surface crushed or broken to expose the raw edges or ends of the fiber and facilitate the absorption of moisture. Claims allowed 2. Also Can. patent No. 211,718. A paper towel having a series of perforations, the edges of these perforations being pressed outwardly upon opposite sides of the towel. Claims allowed 3.—A. P.-C.

L-4. Machine for Forming Shells of Paper. Can. patent No. 211,441, THE NATIONAL PAPER CAN COMPANY, assignee of EDWIN FRANCIS HULBERT, both in Milwaykee, Wis., U.S.A., May 10, 1921. Claims allowed 28.—A. P.-C.

L-5. Reactions of Natural and Artificial Silks. M. FORMHALS. **Ann. de Chim. Anal.** (June 1920); **Rev. Chim Ind.,** xxx, 301 Nov. 1920 The following reaction is applicable to loaded silks. The sample is first dissolved in concentrated sulphuric acid. Part of the solution is rendered alkaline with soda, and is treated with a mixture consisting of paranitraniline, hydrochloric acid, and sodium nitrate. Natural silk gives a red coloration, and artificial silk a yellow coloration. A. P.-C.

L-6. Moulded Cellulose Articles. Can. patent No. 211,950, LA SOCIETE FRANCAISE DES CRINS ARTIFICIELS, assignee of MAURICE OLIVIER, both of Paris (Seine), France, May 24, 1921. A moistened sheet of pure cellulose is applied to a metal mould, which is first heated to a suitable temperature so as to dry the cellulose, and then cooled so as to enable the cellulose article to be withdrawn. Claims allowed 1. —A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 17th Sept. Speaking, the other day, with one of the most prominent men in the paper industry in Ontario, the writer was pointedly reminded by him of the inadvisability, when looking over the situation in the industry, of instituting a comparison between business doing now with that doing last year. "Last year," he said, "saw business in the pulp and paper trade at its peak. When we shall see again a business year of such heavy volume, we cannot say—but probably it will not be soon. But, in spite of all the talk about abnormal and subnormal business, this year, it is a notable fact, that the returns of exports for the four months ending the 31st July last are well ahead of those for the same period of the year before last. For example, for the four months ending 31st July last, we exported paper to the value of $21,354,564 as against $17,532,409 for the same four months in 1919; pulp to the value of $8,976,685, as against $9,534,827 for the same four months in 1919; and wood to the value of $3,704,327, as against $3,260,241 for the same four months in 1919. So that, although our total exports for April, May, June and July of this year are very much less in value than those for the corresponding period of last year, they are very much ahead of those for the corresponding period of 1919 which is, for many reasons, a much fairer year with which to compare the current one.

There is no question but that the general election, which will so shortly be upon us, will give a considerable fillip to certain lines of the paper industry. In this respect, that industry will certainly enjoy "preferential treatment." For, in a general way, it is an axiom among business men, that an election period is detrimental to business. It is a period of uncertainty and unsettlement. Adherents of any party are unwilling to launch out commercially until they know for certain whether the country is "going to the demnition bow-wows" (to quote the immortal Mantalini) or not. Many men prominent in business life give their attention ot the platform, the party organization, or what not. But paper plays a prominent part in election and electioneering. There are the posters, the circulars, and so forth, which make a considerable demand on paper, and there are the envelopes and wrappers which carry electioneering literature to all quarters of the Dominion. Not least important is the increased demand on newsprint. Manifestoes of political leaders, speeches of political candidates, and so forth, —all these have to be printed. Political matters bulk big in the advertising columns of the papers. For more and more, it is becoming the curtain for the papers to insist on advertising rates for statements and programs of policy that formerly used to be given, in more abbreviated form, as news.

The past week has not seen much change in the business aspect of the industry. But such change as there has been has been for the better. On the whole, it looks as though the present month will turn out to have been a very fairly good one in most lines.

KRAFT.—Mills manufacturing kraft continue to do a good business. The writer was told today by the representative of one of the largest of them that orders are coming in well and are well distributed from all parts of the country. Within the last few days, it was said, there has been a distinct improvement.

BOOK PAPERS.—There is some upward movement in the demand for book papers, and this looks likely to be increased in the near future.

TOILETS AND TISSUES.—Mills making toilets and tissues are satisfactorily busy. The reduction of ten cents a pound all round, of which mention was made last week, was necessary, so the writer has been informed to meet external competition of a rather unpleasant kind. An encouraging sign of the times is that many retail traders, who had temporarily discontinued the use of waxed papers for their goods, are taking to it again.

BOX BOARDS.—The present season of the year is one in which an expansion of the business in box boards is looked for, and there are signs that they are beginning to move in somewhat better volume than has been the case lately.

NEWSPRINT.—Canadian newsprint men are certainly disposed to deduce from the special report recently published by the Canadian Pulp and Paper Association, which showed an increase of 11,982 tons in the exportation of newsprint from Canada to the United States, for the month of July last, as compared with June, that the situation as to their American market is still favorable. It is generally felt, too, that the adoption of the price of four cents a lb. f.o.b. mill, for newsprint for the quarter beginning the 1st October, will have satisfactory results. It is expected that this price, while allowing the companies a fair profit, will considerably increase the volume of business. There are some other factors in evidence which should undoubtedly tend to stimulate the consumption of newsprint by way of export. For example, many newspapers in the United States have reduced their price from three to two cents, and there are quite a number of new papers starting up. This sort of thing gives some ground for the belief that the demand for newsprint will increase.

PULPWOOD.—There is little demand for pulpwood. The reason for this is that the larger mills are already amply stocked—if not overstocked. Most of the cutting that will take place this fall will only be for wood actually requisitioned by mills.

PULP.—There is little change in the pulp situation as recorded last week. The demand is, on the whole, sluggish, and prices are practically unchanged.

NEW YORK MARKETS.

New York, September 17.—(Special Correspondence). — An appreciable advance in quotations on box boards has featured the markets in New York this week. Mills in the East have raised prices on plain chip boards to between $32.50 and $35 a ton f.o.b. New York, and some are reported asking up to $37.50, while news board has advanced to between $35 and $40 per ton. These prices represent quite a rise over the market levels of $28 a ton on chip and $30 on news prevailing up to a few days ago, and it is said that the advances have attracted

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a good deal of additional demand, there being considerable speculative buying by box manufacturers as a result of the higher prices.

The advance in board values was not unexpected. This is the season when consumption of board increases, as paper box makers are busy turning out boxes for the pre-holiday trade. The basic reason for the rise in the market on this occasion, however, has been that of a sharp increase in prices on old waste paper, which constitutes the major raw material used by board mills. Quotations on box board for some months gradually moved down until manufacturers commenced to complain of a lack of profit in selling board at the low prices reached. It was therefore expected when paper stock costs mounted that board prices would rise.

Another branch of the market showing more strength is kraft wrapping papers. Demand for this kind of paper has increased substantially, and with mills having a great deal more business on their books they are becoming firmer in their attitude regarding prices. Practically all manufacturers have increased their quotations on No. 1 domestic kraft to 6 cents per pound f. o. b. New York, and on the No. 2 grade to 5.50 cents, and jobbers report mills as holding firm for these prices. It is stated on good authority that kraft mills have from two to three months orders on file, and that in frequent instances difficulty is being experienced by buyers in obtaining the deliveries desired.

Book papers continue quiet. While newsprint, wrapping, tissue and board mills are fairly well supplied with orders, book paper manufacturers are still sorely in want of business. Naturally under the circumstances prices rule easy. Manufacturers are competing for such business as is available and are often shading quotations in order to land business. Instances are cited by jobbers where they have bought machine finished book paper of a good quality down to 5.75c a pound f.o.b. New York, though it can be said that a more average price today is 6 cents. The cause of the slow demand for book papers apparently is the situation in the printing trades. Printing has come down but slightly, if at all, in cost, and the industry consequently is suffering from inactivity. The result is that printing plants are not absorbing anywhere near their normal volume of book papers.

Tissues are firm and in good demand, with an especially steady call for tissue specialties such as towels, napkins and toilet papers. Prices on No. 1 white tissue range between 80 and 90 cents per ream f.o.b. New York, with No. 1 manila and No. 2 white, which are of larger size than No. 1 white, quoted at about the same prices as the latter.

The newsprint situation exhibits little change. There is a fairly good demand, with publishers seemingly showing more interest in spot purchases at the moment than in contract supplies. This is probably because spot newsprint is available at slightly cheaper prices at present than paper bought on contract for delivery prior to October 1st, when the revised contract basis at a lower level becomes effective. Spot quotations range around 4.50 cents per pound at the mill, with occasionally sales reported at a quarter of a cent less, and some foreign newsprint is being marketed in this country at even lower figures than this.

Fine papers show a firming tendency. Demand is gradually improving and prices appear to be settling at something like stabilized levels. The purchase of imported sulphite at low prices has enabled some producers of writing papers to mark prices down on their product to a point where a good deal of buying interest has been stirred up, and indications are that fine paper mills are now securing a larger volume of business than in a lengthy period.

GROUND WOOD. — The market for ground wood is steadily stiffening as available supplies appear to be becoming lower and as demand gradually assumes a broader scope. Tissue paper mills are absorbing good amounts of ground wood in conjunction with fairly heavy buying by newsprint and board mills, and the situation as a whole is characterized by considerable activity. No change of note is reported in quotations, which continue to range around $29 or $30 per ton at pulp mills for prime spruce ground wood, freshly ground, of domestic origin, with the delivered consuming point basis generally working out at an average of $35 a ton. Reports from producing centres tell of grinders having a great deal of trouble in operating because of low water in mill streams, and there are no signs of an end to the drought as yet.

CHEMICAL PULP. — In so far as regards domestic chemical pulps, the market still rules quiet, there being but a slight demand for domestic pulp except for contract customers, and prices on such grades are very unsettled. Foreign pulps, on the other hand, are in comparatively good demand. Paper and board mills are placing orders for fair tonnage and evince much interest in all the offerings made. Prices on some kinds of imported pulp have stiffened. Swedish manufacturers are quoting higher and seem more independent for their quest in America. Swedish bleached sulphite is held for 4 cents per pound landed here, No. 1 unbleached sulphite at 2.75 cents and kraft at 2.25 to 2.40 cents. Offers from German sources, however, continue to come forward at low rates, it being reported

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that German bleached sulphite of No. 1 grade is available at 3.70 cents per pound on the dock here, unbleached sulphite of No. 1 quality at 2.40 cents and No. 2 unbleached sulphite at around 2.25 cents. Importers are being obliged to give a bond on practically all the pulp brought from Europe at present, and this promotes caution in the bringing over of supplies. Just what will be the outcome of the anti-dumping situation is a question. A good deal of opinion pro and con on the subject is being advanced and printed; nothing of a definite character has yet been reached.

RAGS. — The papermaking rag market fails to show the increased activity that is apparent in other branches of the papermakers' supply trade. While demand for some kinds of new cuttings has improved a bit, generally speaking the situation is marked by quietness, and prices remain at approximately the same levels that have obtained for some time. Dealers are becoming more bullish in their views and are not pressing buyers as much as they were, yet consumers looking for rags are mostly buying at such prices as they choose to offer. This condition applies especially to roofing rags. There are only two or three felt mills buying in worthwhile volume and they are securing No. 1 roofing stock at about 80 cents per hundred pounds at shipping points and No. 2 packing at 70 cents or thereabouts. Old thirds and blues, repacked, are quoted at 1.50 to 1.75 cents, repacked old No. 1 whites at 4.25 to 4.75 cents, miscellaneous old No. 1 whites at 3.50 to 3.75 cents, black stockings at 1.50 cents, cotton quilts at 85 cents, and street soiled whites at one cent per pound. New No. 1 white shirt cuttings are rather firmly held by dealers at 8.75 to 9 cents a pound, fancy shirt cuttings at 4.75 cents, new unbleached muslin at 8 cents, white lawns at 7.75 cents, blue overall cuttings at 5.75 cents and new No. 1 washables at 3.50 cents.

PAPER STOCK. — The advance in waste paper prices has continued this week and additional enhancement of values on most grades has been noted. Dealers and packers are quite independent in their attitude and are frequently refusing orders for large tonnage with the excuse that material is so difficult to locate in sizeable volume that they do not deem it wise business judgment to contract for large lots. Old books are jumping in price at a rapid rate, and some dealers are now asking 1.50 cents a pound for No. 1 heavy books and magazines at shipping points, though most of the week's business has been done at around 1.25 cents. Hard white shavings of No. 1 grade are quoted at a minimum of 3.25 cents a pound f.o.b. New York, and No. 1 soft white shavings at 2.60 cents, while old kraft paper is held for 1.90 cents and white news cuttings for 1.75 cents. Folded newspapers have advanced to an average of 70 cents a hundred at shipping points, and No. 1 mixed papers to 50 cents. From all signs, there is an actual scarcity of waste paper. Of course, the higher prices have stimulated collections of low grades, but packers declare that extra efforts to obtain larger quantities of shavings, books, and such grades fail to bring results owing to the slow operations of printing establishments.

OLD ROPE AND BAGGING. — Old manila rope is firming in price and there have been sales to mills reported at 4.25 cents a pound f.o.b. shipping points, although most transactions continue to be at nearer the 4 cents level. Old bagging is firmer in tone but prices hold unchanged, with No. 1 scrap bagging quoted at from 75 cents a hundred upward, roofing bagging at 60 cents and scrap gunny at 90 cents to $1.

ABOUT BALL BEARINGS.

Bearing performance and bearing life may be said to have a highly important influence on the output of pulp and paper machinery. For it is generally admitted that production depends on the consistency of machine operation. And consistent, steady running can be most reliably maintained on a machine in which the elements of moving contact are designed for the least trouble and the longest life, that is to say, for least friction.

It is for the reason that, in properly designed ball bearings, internal friction — and therefore wear on the bearing itself — is reduced to a minimum that they are of such value, in use at vital points of wear, in securing maximum tonnage life. For, as soon as the bearings on paper making machinery, from barkers to cutters, show wear, destructive vibration is set up, with the result that operating costs become higher per unit of production and that the machine's life is, almost always, materially shortened.

Recognizing this, paper-making machine manufacturers are supplying the ball type of bearing on their most important units, and at points where greatest wear would be shown with bearings on the plain or sleeve type. Further, many of them are turning to the SKF marked ball bearings, for the purpose of building longer life into their product. The success of these ball bearings is evidenced by their standardized use in many makes of pulp and paper machinery, both in this country and abroad.

A paper machine with self-aligning ball bearings has been running at 1,000 feet per minute. This record making machine is equipped with ball bearings on the complete line and floor drives, table, wire and carrying rolls as well as press felt and dryer felt rolls. It was stated that "the success of this machine depends in no small measure upon the use of the SKF marked self-aligning ball bearings to eliminate friction."

The SKF ball bearings are produced by the Canadian SKF Company, Ltd., of Montreal and Toronto.

WAGES LOW IN THE WOODS.

The Department of Lands and Forests of Quebec makes the following predictions regarding the outlook for lumbering, and the pulp and paper industries:

"We expect that lumbering operations will be very good in the Ottawa district (where pine is the feature of the cut). Elsewhere the cut will be rather small, owing to the poor demand for spruce and pulp wood.

"The activity of lumbermen will be directed especially towards the removal of burnt material. In fact, during the last five years the utilization of the dead material has become so intense that the total cut of burnt trees, windfall trees and insect-killed trees, etc., amounted to close to twenty-five per cent of the cut on Crown lands.

"We have no information about the cut on private lands, but since there is no demand to speak of for pulp wood, the cut will be rather small.

"Wages as far as can be learned at this time, will be about $25 to $40 a month for lumberjacks. It is on record that in one district men have agreed to work for as low a figure as $17 a month.

The dome of the famous Palace of Justice in Brussels is made of papier-mache.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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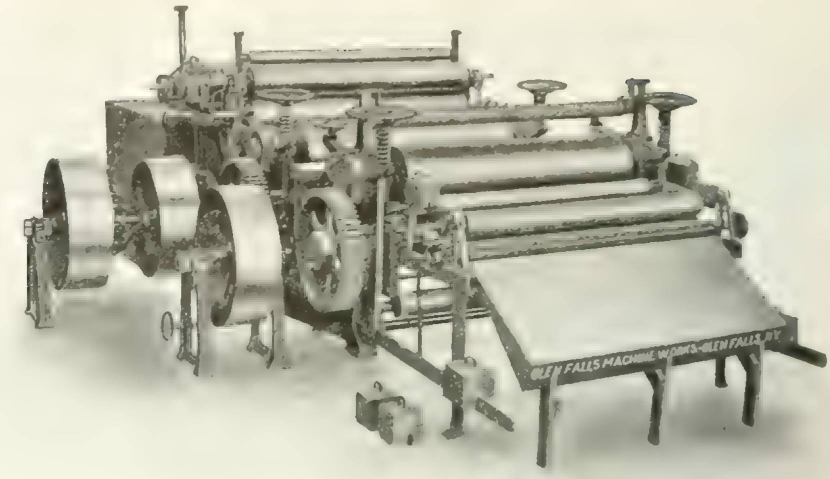

Rogers Wet Machines, for automatically converting Chemical Pulp into sheets 47% dry, have a capacity of at least 25 tons a day. The sheets are 33 by 36 inches and make convenient bundles for storage, for the beater or for shipping. On account of the low cost of power, labor and maintenance; the high dry test and small amount of floor space per ton of Pulp produced; these machines pay for themselves within a year and yield a handsome return on the investment. They lower freight costs where Pulp is shipped.

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EDITORIAL

GIVE THEM AS GOOD AS YOU GOT.

There is no difference of opinion among leaders of business and industry as to the fundamental qualification for the attainment of success in and satisfaction from, life.. It is character that counts most. Wealth, health, education, social position, inherent ability, none of these can, of themselves, possibly be considered as the foundation of a worth-while life. Ask any employer of men what he most desires and, in the great majority of cases, he will name some quality that is but another name for, or is dependent on, character. He may call it honesty, reliability, trustworthiness, or something of the kind, but he means character.

The men who have done the most for their generation, who have rendered faithful service in even humble positions, who have made sacrifices for others they have had character. Where did they get it?

The biography of nearly every man of prominence and accomplishment begins with a few words about his father and mother and a brief description of his early home life. The life story of the criminal and the failure usually begin the same way. Why? It is because the influence of the father and mother and the atmosphere of the home are the most potent influences on the lives of each succeeding generation. It is true, sadly true, that all boys and girls do not follow the example and precept of exemplary parents; it is happily true, also, that some boys and girls rise above the sordid standard of immoral and intemperate homes. It is, nevertheless, a fact that plants and children grow best when started in good soil.

What man will hesitate to ascribe what good there is in him to the influence of a Christian father or mother or friend? What man is getting any great satisfaction from his life who has not felt such an influence? Certainly none of our readers. Yet how many of us are passing on the warmth, the cheer, the encouragement, the inspiration of such an influence to the younger people about us? If we are not, there is one reason; we have turned our backs and closed our hearts and dulled our senses to the greatest force and factor in the life of the world—the spirit of Christ. If we are reflecting light, love, and life to those around us, there is one reason; we are living close to Him and getting the power that makes us men; we are connected to the source of true character. We must, each one, be of one kind or the other—a sponge that soaks up and rots or a channel that carries the water of life; a black body that absorbs every ray, or a reflector that sends a beam of light down the pathway of this one or that.

We all got the benefits of character from the elders of our early days; some at home, some at school, some at Sunday school. These are many men today who demand character in those they employ and expect it to be developed in their children and yet are so living that their influence is mostly on the other side. They call for temperance and vote for prohibition, and keep a bottle on the shelf. They call for honesty and put a fellow-man out of business or "fix it" with those in authority. They decry the impotency of the Church and play golf on Sunday and do nothing to help energize this great instrument of God. They bewail the failure of Christianity and ignore the Golden Rule.

How are we to have honest, faithful, helpful men and women if we don't teach the children, by precept and example? There are three great agencies for developing character, the home, the school and the Sunday school. Each has its own place and all are needed. The function of the home is principally to furnish the example; that of the school is to train the mind to read and reason; that of the Sunday school is to impart a knowledge of the word of God and to inculcate the fundamental principles of Christian character. Most of us had the benefit of all three. Are we doing our part in passing along by helping, through personal service or otherwise, as good as we got?

A GOOD TIME TO BEGIN.

The year 1921 will be remembered by those most interested in forestry operations as a *bad fire year.* The spring and summer have been unusually dry and the loss of timber has been great, partly in destruction of nature trees but especially in the destruction of young growth, the hope of our mills 10, 20, 30 and 40 years from now. The litter of slash from logging operations is largely responsible for the conditions that made it possible for a fire to start — a green forest does not take fire readily. Now is a particularly favorable time to start a properly planned system of slash disposal. Operations this year will be on a reduced scale. Wages are lower than for several years and there will not be the demand calling for rush operations with small crews. Plenty of experienced woodsmen will be available, and, with a little inspiration and education, will catch the spirit of conservation of their means of livelihood.

SECOND INTERNATIONAL NUMBER.

The second annual International number of the Pulp and Paper Magazine is now in preparation. Copies will be sent to regular subscribers who send in their requests before Oct. 21. After that date and to non-subscribers, the price will be $1.00.

NEW BULLETIN ON SITKA SPRUCE.

The Forest Products Laboratories of Canada, under the Forestry Branch of the Department of the Interior, are making a systematic study of the mechanical and physical qualities of all of Canada's commercial timbers. As each study is completed, the results are issued in bulletin form, and these bulletin are sent free to all citizens interested, upon application to the Director of Forestry, Ottawa. The object, of course, is the more complete and efficient utilization of all Canada's native woods at home and a better appreciation of their qualities among engineers, builders and manufacturers abroad, so as to encourage export. The bulletins so far issued in this series are No. 59, "Canadian Woods for Structural Timbers," and No. 60, "Canadian Douglas Fir: Its Mechanical and Physical Properties." Copies of these bulletins are available for free distribution.

The latest of the series to be issued is No. 71, "Canadian Sitka Spruce: Its Mechanical and Physical Properties." The importance of this wood in connection with airplane construction, and other uses recently discovered for it, is the reason for the issue of this study at this place in the series. This bulletin will not be issued for a month or six weeks, but any applications for copies will be dealt with as soon as the edition is received from the printer.

The author of Bulletin No. 71 is L. L. Brown, B.Sc., A.M.E.I.C. formerly Superintendent of the Vancouver Laboratory, Forest Products Laboratories of Canada.

A few paragraphs from the advance proof of the bulletin will be of interest.

Sitka spruce is found along the Pacific coast from northern California to Alaska, seldom extending back more than fifty miles from salt water and reaching its best growth in constantly moist, deep, rich soils in a humid atmosphere.

"It is generally distributed throughout the western slope of the coast mountains and on Vancouver and Queen Charlotte islands.

"Though Sitka spruce is one of the most valuable trees in the province, it is unfortunately not very abundant. Less than 7 per cent of the merchantable stand on the coast is Sitka spruce, most of which is to be found in the northern coastal region extending from about the head of Vancouver island to Portland canal and including Queen Charlotte islands.

"Sitka spruce is one of the largest trees on the coast, attaining a diameter of from 8 to 12 feet and a height of from 160 to 180 feet. Ordinarily it is from 3 to 6 feet in diameter and 100 to 125 feet high. When grown in fairly dense stands the trunk is usually clear for from 40 feet to 80 feet and tapers very little till the branches are reached. Single trees contain from 8,000 to 10,000 feet board measure and occasionally as much as 15,000 feet board measure. It seldom occurs in pure stands, but in mixture with hemlock and balsam, or with cottonwood, it frequently runs from 40,000 to 60,000 feet board measure per acre." ("Forests of British Columbia," Whitford and Craig.)

In the publication just mentioned it is estimated that there are over fourteen billion feet board measure of Sitka spruce in British Columbia.

Annual Cut.

The annual cut of Sitka spruce in British Columbia for the past few years has been as follows: in 1916, 68,263,000 feet board measure; in 1917, 92,963,000 feet board measure; and in 1918, 239,787,000 feet board measure. The wood, straight-grained, easily worked, and very strong for its weight, was greatly in demand for airplane construction during the war, as is evidenced by the fact that 26.124,000 feet board measure were produced in British Columbia for airplane purposes during 1918, 6,850,000 feet board measure being produced during November of that year.*

Increasing Use of Sitka Spruce.

Sitka spruce was practically unknown outside the Pacific coast before the war, and it owes its popularity largely to the advertising it received at that time, and also to the fact that large stocks were left after the war, which stocks were sold to woodworking factories. Of course, where it was known Sitka spruce had long been used for cooperage, boxes, both solid and veneer, and for framing and interior trim in house construction and office bulidings, but of late eastern factories have beguni to use it in the manufacture of sashes and doors, ice-cream tubs, tank stock, kitchen tables, breadboards, boats, spars, oars, paddles, billiard table frames, and for core-stock, back posts, and sounding-boards for pianos, diaphragms and horns for phonographs, wagon sides and bottoms, car stock, and ladder stock.

Conclusions.

Sitka spruce grown on the Queen Charlotte islands is stronger than that grown on the mainland in southern British Columbia (as represented by a stand near Kings, British Columbia) by approximately 3 to 14 per cent, based on the former, in the case of the more important tests.

The Sitka spruce grown at Masset Inlet, Queen Charlotte islands, is of nearly identical strength properties with that grown at Thurston Harbour in the same islands, the slight difference being in favour of spruce from the latter place.

The variations from the average results are large in this as in other woods, and where a definite strength is demanded it can be established only by determining the density of the piece in question.

The density of Sitka spruce is not readily apparent, owing to the similarity of color of the spring-wood and summer-wood and to the gradual transition from one to the other, so that a visual method of determining density by esimating the proportion of summer-wood is not practicable. Resort must be had to actual measurement.

The strength of Sitka spruce increases from the pith to the periphery in trees of the size tested (the largest tree was more than 5 feet in diameter), the weakest wood being near the centre.

The strength of small clear pieces of Sitka spruce increases very rapidly when dried below the fibre-saturation point, which is at approximately 31 per cent of moisture, based on the dry weight of the wood. Any increase of moisture above the fibre-saturation point does not influence the strength of the piece.

By the use of curves, derived from the results of tests, showing the relation between density and the various strength functions, the strength of any piece of clear Sitka spruce can be very closely estimated if its density is known.

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* Reports of the Forestry Branch, British Columbia, for 1916 17 17.

Selling Scientifically and Manufacturing Methodically

By T. J. BURKE, C. A., Secretary-Treasurer, Cost
Association of the Paper Industry.

"The right goods at the right price" is a sign which I have noted frequently of late as appearing in the windows of many stores. It is a notice that strikes at the very root of things. The jobbers and retailers advertise as having the right goods at the right price, but what about the manufacturers? What steps do they take to make sure that they have the right goods at the right price? Taking your own case for example, are you satisfied that your products can be considered to be within this category? Not only, are you satisfied that they may be so considered, but are you absolutely sure that this is the case? In order to be quite sure you must have reliable figures, and now, to come to the climax of the matter, have you these reliable figures? What is your policy regarding your products? How have you formulated this policy?

In these days when business has to be stalked as carefully as one would stalk a deer, it is absolutely essential that every scientific aid possible shall be used. Up-to-date cost systems are essentially scientific aids to business, their usefulness lying in the fact that they help manufacturers to sell scientifically and to manufacture methodically, by enabling him to push, through his sales department, those goods on which he makes the most profit and to control through his production department, his output, so that it will keep pace with the sales made.

Paper must certainly be considered one of the so-called fundamental commodities today, and the only trouble with these commodities has been very largely one of price. Certainly the demand for paper has fallen off, but as stated above, it is a fundamental commodity and there must always be what might be called a basic demand which must be supplied. This basic demand has undoubtedly been kept at its lowest possible ebb, mainly on account of the general distrust of prices.

It is absolutely necessary that prospective purchasers be made to feel that prices will not go lower and that therefore their competitors will not gain any advantage over them by waiting a little longer. In other words, confidence must be inspired in prospective buyers. The dictionary definition of "confidence" is given as "trust" or "reliance." I ask the question, how can prospective purchasers be expected to put reliance in the prices quoted when there are such big variations and so many changes. Undoubtedly some of these changes are due to what may be called fundamental reasons, but many of them are due to a desire to get business at any price and therein lies the danger. To build up "confidence" is one thing, to play the "confidence-game" is another. To go back to the dictionary, the definition given of "confdence-game" is a swindling scheme to get money. That's rather a strong expression to use in connection with the manufacturers who sell their products below cost, but if we give the matter serious attention and consideration, it would appear that the term "confidence game" approaches very closely what they are doing. They are attempting to build up confidence by resorting to unfair methods of business, for manufacturers who sell their products at less than cost price are resorting to unfair methods of business, inasmuch as they know quite well that there must come a time when they will no longer be able to sell on the same basis. What they hope to do is to secure business at the lower basis, and then, after having lulled the purchaser in a feeling of security, to gradually work on to a high price basis.

That manufacturers may sell their products at slightly below cost with the hope of keeping their organization together and taking care of their overhead thereby eliminating the heavy cost of shutting down is, of course, perfectly legitimate, but what might be termed illegitimate competition is competition from manufacturers who do it nevertheless, simply because they do not know what they are doing. How can they know, since they have to wait until perhaps the end of a six months' period before they can state definitely whether they have made a profit or a loss? In the meantime, by means of rule of thumb methods, they endeavor to ascertain how things are going. Naturally such a method breads fear, and a man who is afraid of what may be in store is not in a position to use his best business judgment. He generally decides that whatever else he does, he must keep the mill running. He feels that as long as there is something to do, that he must be better off than he would be if he were shut down altogether, because then his equipment would be idle and earning him nothing, whilst as long as his machines are running, even only part time, he feels that they are earning something for him. What he overlooks is the fact that whilst he would be losing his fixed charges and could not expect any interest from his investment whilst his mill was shut down, yet the goods that he manufactures and sells may mean a much bigger loss to him at the prices he quotes, inasmuch as the cost of the raw material and labor which he has to put into those goods may not all come back to him but only a part thereof and his loss will thus be increased.

Knowledge Is Power.

These are very simple facts known to a great many and yet there are still manufacturers who are not convinced of the benefits which they would derive from an up-to-date cost system. They much prefer to take these big risks, because forsooth they might have to add the expense of two or three extra clerks and one good cost manager. Knowledge is power, and a proper knowledge of your production costs must and will mean a better ability to do business. Right here I would like to urge the necessity for a really up-to-date cost system. Such methods for instance as "distributing overhead expenses in accordance with the percentage of direct labor" cannot be called scientific nor reliable. I therefore urge all manufacturers of paper when taking up this cost question to make a good job of it and to get the best possible advice. Do not employ a cost man because a friend told you he was a good bookkeeper. Very big strides have been made by cost accountants in recent years and the leaders amongst them are very far-seeing clever accountants.

Strangely enough, manufacturers have never had to be persuaded very strongly, of the necessity for getting the best salesmen available and they have always been willing to pay the salesmen big salaries. Undoubtedly the best ones are worth the salaries they receive because they will supply the manufacturer with a lot of useful information regarding the possibilities for selling his various products in different territories. Now if any manufacturer has a scientific cost system he is in a position to work out, on a scientific basis, just what price he can quote in various territories for the products likely to sell best there and how those prices compare with the prices quoted by his competitors. In this way he can pick and choose the most profitable business and this is the business, which it is all the more desirable and necessary to have, at a time when the mill is running below normal.

There never was a time when the profits to be derived from a properly constructed and well thought out cost system were greater, nor could be used to better advantage. Such large companies as the International Paper Company, American Writing Paper Company and others have been thoroughly convinced on this point and have spent many thousands of dollars in perfecting their cost organizations. They fully realize the benefits that would accrue to the pulp and paper industry as a whole, if all the manufacturers in the industry could be brought to a realization of these benefits and that is why they are supporters of this Association. I have sometimes had it said to me by a small manufacturer "Well, I can understand a large company like that wanting a cost system, because it is not possible for them to give the personal supervision to their different departments that I can give." This is the kind of man who is very difficult to convince. He points to the fact that he has always made money, or until recently, and further states that he expects to do so in the future. He seems to overlook entirely the possibility that he might have made a good deal more money than he has if he had manufactured on a methodical basis, so that he produced just those products, which his salesmen could sell at the largest profit.

After all, it is merely a matter of "common sense," and when manufacturers generally recognize this, there will be less hesitation about realizing the importance of the Cost Department. Unfortunately, there have been failures amongst the cost men, just as there have been failures in every other line of business. Nevertheless, the bulk of the systems installed have been very successful and I can give quotations today from a large number of presidents of well-to-do companies clearly setting forth their belief in cost systems and their reasons for this belief. I know that all these manufacturers will be represented at the Convention which this Association will hold at the Drake Hotel in Chicago on October 6th and 7th next. They are doing fine work by spending their time and money in an endeavour to place the pulp and paper industry on a sound economic basis, by impressing upon the manufacturers within that industry, the importance of the cost question and the necessity for installing up-to-date cost systems in their mills. Instead of playing the "confidence-game" they are striving to restore "confidence" in general.

This confidence has been somewhat rudely shaken by the slashing of prices which has taken place within recent months. This cut-throat competition could be eliminated by the adoption of uniform cost accounting systems such are in use in many associations today. I seriously urge groups of manufacturerr making the same products to get together and tackle this problem seriously. Like a good many other problems, it looks much larger than it really is. No one questions now the very large benefits that have accrued to the printers through the excellent uniform cost accounting system which has been adopted throughout that industry. Whilst talking to a gentleman who was connected with the United Typothetae of America for many years recently, I learned that they were expending over $2,000,000 a year in giving service to their members. Surely the pulp and paper industry is as big a one as the printing industry, since the latter could not exist without the former. If the printers can afford to spend $2,000,000 a year, surely the pulp and paper manufacturers can afford to spend the small amount necessary to have uniform cost systems adopted by each of the different groups within the industry and most certainly it would prove to be one of the most profitable investments possible.

BATHURST BUILDING LIME KILNS.

On or about the first day of October the local pulp mill of the Bathurst Company Limited, will resume operation. This gratifying piece of news was given out for publication last week by Mr. Angus McLean, general manager of the company.

A gang of men are already at work doing repairs and the date of restarting the mill is dependent, to some extent, upon the time required to put the plant in proper working condition.

The re-opening of the mill will affect in the neighbourhood of 400 men, Mr. McLean also stated that the plant would resume on the twenty-four hour grind, which means that from the start it will be working well up to capacity.

While delighted to be able to make the announcement at this time Mr. McLean was obviously not impressed with the market price of pulp. He pointed out that there had been distinct improvement in the demand for Canadian pulp during the past few weeks, but added that the price remained at a ridiculously low figure. The market however was the main thing at the present time, he said. It was something to be able to sell at all after so many months of idleness during which they could not sell at any price.

Constructing Lime Kilns.

While speaking with reference to the re-opening of the pulp mill Mr. McLean took occasion to refer to the construction by his company of two kilns on the wharf abutting on the mill property. Mr. McLean made an announcement of his intention to undertake this work several months ago, and now the scheme is in process of execution, and as a result of its completion the rock will be brought over from the company's quarry at Port Daniel, Que., and transformed into lime right on the spot.

Mr. McLean predicts that the kilns will be ready for the manufacture of lime by Christmas, and that thereafter, instead of shipping in lime, they will be able to produce their own. The two kilns have a capacity of from twenty-five to thirty tons a day. By constructing the kilns on the wharf all unnecessary labor in transportation will be eliminated, as the rock will be shipped across the Bay in Scows and dumped right into the kilns.

Contentment can be either commendable or condemnable.

Industrial Welfare Work in British Paper Mills

(Special from Our London Correspondent.)

Industrial Welfare Work differs somewhat in England from that in America. The spirit of America, however, is the spirit of England in the movement; the difference between Canadian Welfare Work and that of the United Kingdom is the question of co-operation and, by that I mean the "fine art" to which it has been developed in the latter country. I do know that one or two large Canadian firms do not like the words "Industrial Welfare"; they prefer to know it by another name, and like all good employers they have a kind spirit: It is their shyness. But the phases of Industrial Welfare Work are many—and interesting—and for the guidance of Canadian pulp and paper men I am giving a brief and general outline of what is being done in some of the British paper mills to cement a good feeling between employers and workers. It must be borne in mind that some of the schemes in vogue today in Canada are not to be criticised, even although they are not called welfare schemes, as they are in England and America. Conditions vary—ideas are varied—and should a firm go to the extent of even putting up a shack, as a messing room, it is a step in Welfare Work, or the opening up of a scheme to help somebody. I remember in Germany many years before war broke out, the proprietors of a large factory had cocoa-nut fibre matting spread out in the open so that the workers could rest on it after partaking their mid-day soup. It was a concession in a small way in the direction of Welfare Work and judging by the patronage the matting received it was appreciated.

The Movement in England.

Now in England—or, at least in the United Kingdom—Welfare Work is being extended and developed to the highest degree in most of the important industries, including the paper, box-board, bag, and other mills. But all schemes are not alike. Each mill has its own way of going about things, or promoting its own scheme, and in the end they spring from one of the following phases, grouped under six heads, in the chart I have arranged for Canadians as follows:

CHART OF INDUSTRIAL WELFARE.

EFFICIENCY	PROGRESS	EDUCATION	HEALTH	LEISURE	THRIFT
Employment	Foremen's Reports	Apprenticeship Schemes	Medical Examination	Lodgings	Savings Bank
Engaging	Complaints	Technical Work	First Aid	Recreation	Sick Club
Tests	Suggestions	Practical Work	Safety First	Social Clubs	Holiday Fund
Social Psychology	Charts	Demonstrations	Canteen	Swimming	Convalescent Home
Physical	Statistics	Debating	Food	Golf, Etc.	
Timekeeping	Moral Tone	Elocution	Heat, Light	Sports	
Economy	Progress Records	Music	Ventilation	Y. M. C. A.	
Co-operation	"Esprit de Firm	Industrial History	Sick Visits		
Promotions		Business Routine	Cleanliness		
Dismissals					
Co-operation with Trade Unions and Employers Federations					
Reports on Charts					
Out-Put					

The inference is not to be drawn that any particular paper mill is running a scheme covering these six phases. As an instance, I know of a mill which has a welfare scheme covering some of the subjects mentioned under the headings of "Efficiency," "Progress," "Education," "Leisure," and "Thrift," while another mill has a minor scheme covering only one heading. But each and all of the phases mentioned in the chart helps very materially in cementing a good relationship between Capital and Labour and there is no great industry in the United Kingdom but has made the movement of Welfare Work part of its organization. Indeed, it is recognized that industrial work can only be carried on at the highest efficiency when workers are free from all preoccupations and grievances—real and fancied—and when the working environment is healthy.

The Works Committee.

Successful welfare schemes are materially helped by a committee of the mill, or works, elected by fellow-workers each year, representative of each department—including Directors representatives—and this body is known as a Works Committee. Not many miles from London there is a paper mill, of fine reputation, which has a good energetic Works Committee. Its main object, as a Committee, is to run the six phases of the chart, particularly No. 1, without fear or favour and with success, and this is done by sub-committees dealing with "Progress," "Education," "Health," "Leisure," and "Thrift," who report to the main body—themselves as a whole—to work out the salvation of No. 1, "Efficiency". As a rule some Works Committee have their proceedings reported in a Works Magazine, for mill workers only, and it is sold at a small cost to cover expenses, so that the Labourer in the mill yard can read what is going on in the Firm, as well as amongst the travellers, the progress of work, sport, and the health of Tom Jones, of No. 2 mill, if he is on the sick list. Some of these Works Magazines inside and outside the paper industry are very fair productions and in many cases beautifully printed—everything depending on the subscription and the Firm's subsidity or advertisement revenue. Usually at the beginning of Works Magazines the President, or managing director, on behalf of the mill owners, has some straight talk for the workers printed, then the Editor follows with his views on current events, with reports on the phases of the charts following, interspersed with drawings or writings of the humorist's pen. And, last, but not least, the summary of the doings of the Works Committee—the mill Parliament—appears.

Education.

Behind all this is a simple process of "Education" eradicating wrong ideas by educational methods. Take the heading "Education" in the chart I know of a paper mill where Technical Work is very closely followed and the workers are helped in practical work, as well as music, dancing, industrial history, and business routine. Results are published in the Works Magazine and this is what one may often read, as an example:—In the suggestion box not more than 50 suggestions, dealing with various subjects, were received. The one sent in by "Mr. So-and-So" is an old one and was rejected. "Mr. So-and-So's" suggestion for the present improvement in the machine-room, which means economy, is rewarded by a payment to him of £20." The suggestion box makes the workers think and incidentally the mill reaps the benefit, not only of the improvement, but in having a thoughtful employee.

There is another mill, which under the heading of "Progress," has a chart fixed on the wall of the machine-room. It is closely scrutinised by all who work in it and from one end of the week to another end the policy of the workers in that machine-room is to keep the output increasing so that each month will show an increase on the previous month. This chart, I am told, works like magic on the men. They get interested in it and at the end of 3 months their figures on the chart are recorded in the Works Magazine with a comparison of what was done in the previous 3 months, accompanied by a statement explanatory of the rise or fall as the case may be. In some mills where two or more machines are working there is a system of encouraging the machine-room with monetary prizes for increased output.

The Social Side.

Nearly all the British paper, board, and paper bag mills have their own social committees, either under the Works Committee, or, if there is no Committee, a representative one of the mill is elected. Dancing is encouraged, sports of all kinds, and various forms of entertainments. A summer's day outing at some favorite country spot, where there is plenty to eat, or at some well-known watering resort, is one of the year's fixtures and many a time I have seen all the mill, from the highest official down to humblest worker, board a train bent on a good day's pleasure, the cost of which might be borne by the Committee collecting a small weekly subscription.

The Holiday Fund, which comes under the heading of "Thrift," is not the only Fund. Some mills have Sick-Benefit clubs, or a fund to keep invalids in Convalescent Homes. The Sick-Benefit club is run by a small committee, the members of which collect each week a small amount of money to help any worker in the mill—by means of weekly payments—during his or her enforced absence from work. Then during the days of convalescence the invalid is sent away to a convalescent home for a change of air and further medical treatment. These two phases of Welfare Work are invaluable in the British mills.

Another social element is the annual dinner of the mill workers when they sit round the festive board along with the management and directors. But probably the most unique event is the departure of Foreign Travellers, who are usually entertained by their Principals before leaving England's shores to sell the products of the British Paper Mills. The occasion is marked out for friendly conversation and the clearing up of any little incidentals appertaining to the visitation abroad.

Savings Bank and Health.

The Savings Bank and Thrift are always advocated in the mills. One instance is worth recording. A certain mill had a Savings Bank committee and each week a certain amount was paid by the workers who desired to participate in the Bank. In the course of time the millowners were making extensions and the workers put their Bank to some use by taking out over £8,000 worth of shares. It will be thus seen that the workers, through the Thrift encouraged by their employers, became shareholders and by the small weekly contribution paid, never missed from their pockets the money so invested. They are now more interested in their work and feel they are working for something tangible, as well as helping their employers.

The question of Health is a big one in the United Kingdom. All sorts of schemes are advocated because it is well-known a man or women in poor health is not helping production. Medical examinations are suggested and an inspection by the Dentist—and they are in use in some places, but not, to say the least, uncommon in paper mills. The great point is to find suitable work for the weaklings. He may be a good beaterman and the firm cannot afford to lose him, or do not like to lose him on account of long service, and then the question often arises: What are we to do with him? It is here the Works Committee often does a good turn, after going fully into the merits and demerits of his case and many a good workman is saved for the firm.

Canteens (caffeterias) and Dining Rooms, where hot meals are provided, are to be seen today in the British mills. I know Canada has some. The British ones are very comfortable as a rule and well looked after.

But notable features under "Health" are cleanliness, ventilation, and visits to the sick. By cleanliness, I mean cleanliness in the mill itself and proper drainage to keep down sickness. Some of the British mills make it a point to report on and visit their workers when sick—and later the sick club committee does the rest. Most mills have a First Aid party in cases of accidents or sickness and very often some good results are achieved.

Another branch of Health work in Industrial Welfare is the Institute, or Hall, for the workers to meet in. There is one paper mill producing newsprint which has a Hall containing refreshment counter, billiard room, games room, reading room and library, facilities for a hot bath, and a swimming bath 50ft. long. This is an instance of what a Hall is like.

Pensions and Other Benefits.

A survey of some of the British paper mills and other concerns would surprise one of the remarkable development of Welfare Work. Some Firms employ an Industrial Welfare Officer who does nothing else but study the workers. Up to the present I have not heard of one being engaged in the paper industry, but I know of plenty in the Textile industry. In the paper trade the Works Committee takes his place, with the help of the millowners.

Probably the best scheme of all is the Pensions. One of the North of England mills has a splendid one initiated by the Managing-Director. Into the Pensions Scheme the workers, of a certain year's service and over, pay, and when they come to a certain age can retire on a weekly allowance to enjoy their days of old age. These schemes vary in mills. Some have a fixed retirement age; others have not. In addition to pensions there are Death Benefit Funds, which afford the relatives of a mill worker when he or she dies, a certain sum of money to cover funeral expenses and a good bit over "to keep the wolf from the door."

Technology and Classes.

Every young man in a paper mill, or paper office agent, dealer, or merchant—is encouraged to go in for classes and technical study, particularly if he has any knowledge of chemistry. Sometimes the schools are outside the mill and sometimes inside. In the matter of Technical work the British Paper Makers Association has given every encouragement, financially and otherwise, and Education Authorities are always reminded of the fact that papermaking students want tuition, as well as other industrial students. But in the paper mill the young man gets his ground work for the setting and the schools and colleges aid him in his progress.

A reference again to the chart, which covers only some of the subjects, will give an idea of what Welfare Work is like in the United Kingdom at present. No industry can do without it and if properly utilized, millowners will reap considerable profit and help. Canadians know so much about "Safety First" I have not dealt with the subject, neither have I gone into the question of charts known so well in the Dominion.

Industrial Welfare Work has come to stay and it is going to cement and promote a better feeling between employer and employee. But to make it workable the mill Parliament must not be a farce, nor onesided, because such vital subjects as dismissals, economy, output, interviewing and engaging new hands must not be played with. It is up to each mill to have its own way—but go the right way about it.

A COURSE IN INDUSTRIAL METALLOGRAPHY.

For several years past there has been given in the Department of Metallurgy, McGill University, an extension course in Metallography which has been attended by Mechanics, Engineers, Chemists, and those desiring a "Hobby" or whose business brought them in contact with metals and who desired to have more knowledge of their composition.

No previous knowledge of the subject is assumed and the course is essentially practical from first to last. Ferrous and non-ferrous metals are dealt with equally and training given in preparing them for examination under the microscope and finally photographing the various structures which develop.

Anyone desiring to enroll should apply to Dr. Alfred Stansfield,Department of Metallurgy,McGill University or to the lecturers Harold J. Roast F.C.S., F.C.I.C., or Charles F. Pascoe, F.C.I.C, both of whom also hold positions with Manufacturers of metal products used in the Pulp and Paper industrry.

The first class will be held on Monday evening, November 7th, at 8.00 p.m. in the Chemistry Building McGill University.

Fee for the course of 15 periods $20.00.

As on ly fifteen members can be accommodated, application should be made at once.

The microscopic equipment has been added to considerably this year, particularly in regard to the photographic end. If any former members desire to continue their work, provision will be made for an advanced class if sufficient members are obtained.

Marriage is a love bond; divorce is a liberty bond.

ABANDON JOINT MEETING OF T. A. P. P. I. AND SUPERINTENDENTS.

Definite action was taken by the Executive Committee of the Technical Association of the Pulp and Paper Industry at a meeting held Thursday, September 15, on the question of continuing with arrangements for holding the scheduled Joint Fall Meeting of T. A. P. P. I. at the American Pulp and Paper Mill Superintendents' Association at Washington and other points during the week of October 18. Word had been received from representatives of the Superintendents Association and the executive of the local committees of arrangements indicating a lack of enthusiasm for the meeting as a consequence of the business depression. The Executie Committee of T. A. P. P. I. was in complete agreement with the officers of the Superintendents' Association in regard to business conditions being unfavorable for a joint meeting at the time scheduled, and on a vote being taken at the meeting on Thursday, it was unanimously resolved to cancel the Fall Meeting. It was, however, the unanimous opinion of all that a joint meeting with the members of the American Puljp and Paper Mill Superintendents' Association was desirable and arrangements will be made for such a meeting at a place and time to be announced later.

The Committee on Service to Members of T.A.P.P.I. of which Fred C. Clark is chairman, is hopeful for obtaining for early publication in the trade journals all reports of committees and papers that would ordinarily have been presented at the oint Fall Meeting. As one of the steps in giving improved service to members, Mr. Clark's committee has issued a questionnaire which members are asked to check according to instructions and return to the Secretary's office without delay.

COST EXPERTS TO MEET IN CHICAGO.

In recognition of the progressive activities of paper mill cost accountants in the Middle West, Chicago has been selected for the annual convention of the Cost Association of the Paper Industry on October 6 and 7. It is the first time in two years that the association has met near the western mills, where some of the most active local divisions are located.

At this convention in Chicago an advance step is planned in the establishment of groups for the unification of cost accounting procedure among those making similar kinds of paper, such as tissue, writing, book and the like.

Because of this plan for the extension of the activities of the Cost Association, there will be a large representation from the east, from the Kalamazoo, Mich., Miami Valley, Ohio and other such districts where there already exist strong divisional organizations.

"In times of prosperity," said Thomas J. Burke, ecreary of the national association, "the need for careful accounting is not so strongly felt. But in times of depression such as those which are happily now passing, the cost accountant proves his value to his employer, for careful cost accountancy may mean the difference between failure and success in business."

How the United Typothetae of America through uniform cost accounting, not only standardized the printing industry, but reduced the whole scale of printing costs to the consumer will be discussed by Joseph A. Borden, formerly with the Typothetae, and other addresses along similar lines will be given by others of equal prominence.

The Structure of Cereal Straws

By FRANCIS E. LLOYD, F.R.S.C. McGill University.

Continued from last issue

THE INTERNAL TISSUES.

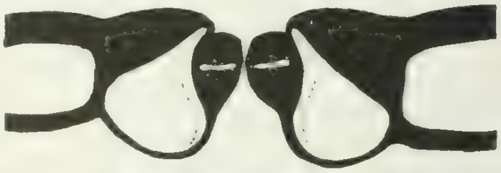
The epidermis encloses a variety of tissues and a still greater variety of their component cells. The latter may be segregated into two groups, according to their dimensions; roughly, those which are rather short **(parenchyma)** and those which are elongated **(prosenchyma)**. These distinctions are made chiefly for the purposes of description, and are used as such. It has been pointed out that the epidermis is differentiated into longitudinal zones ("fluting") which are readily distinguishable by the character of the cells composing them, and most easily by the presence or absence of stomata (figures 6-13). Those with stomata may be called the stomatal-zones for convenience. These distinctions hold for both leaf and stem and with them in mind we may proceed to consider the arrangement of the internal tissues of both.

Internal Tissues of the Stem.

The Chlorenchyma.—Lying just beneath the pore zones of the epidermis are to be found corresponding zones of very thin walled and loosely arranged cells which during the life of the plant contain green coloring matter (chlorophyll) (figure 5, ch). These cells constitute the chlorenchyma which appears merely as green color to the eye, arranged in longitudinal zones. The chlorenchyma is the active seat of starch formation, for which purpose carbon dioxide is necessary. This finds its way by diffusion into the chlorenchyma through the stomata pores. This relation explains the distribution of these pores in longitudinal zones.

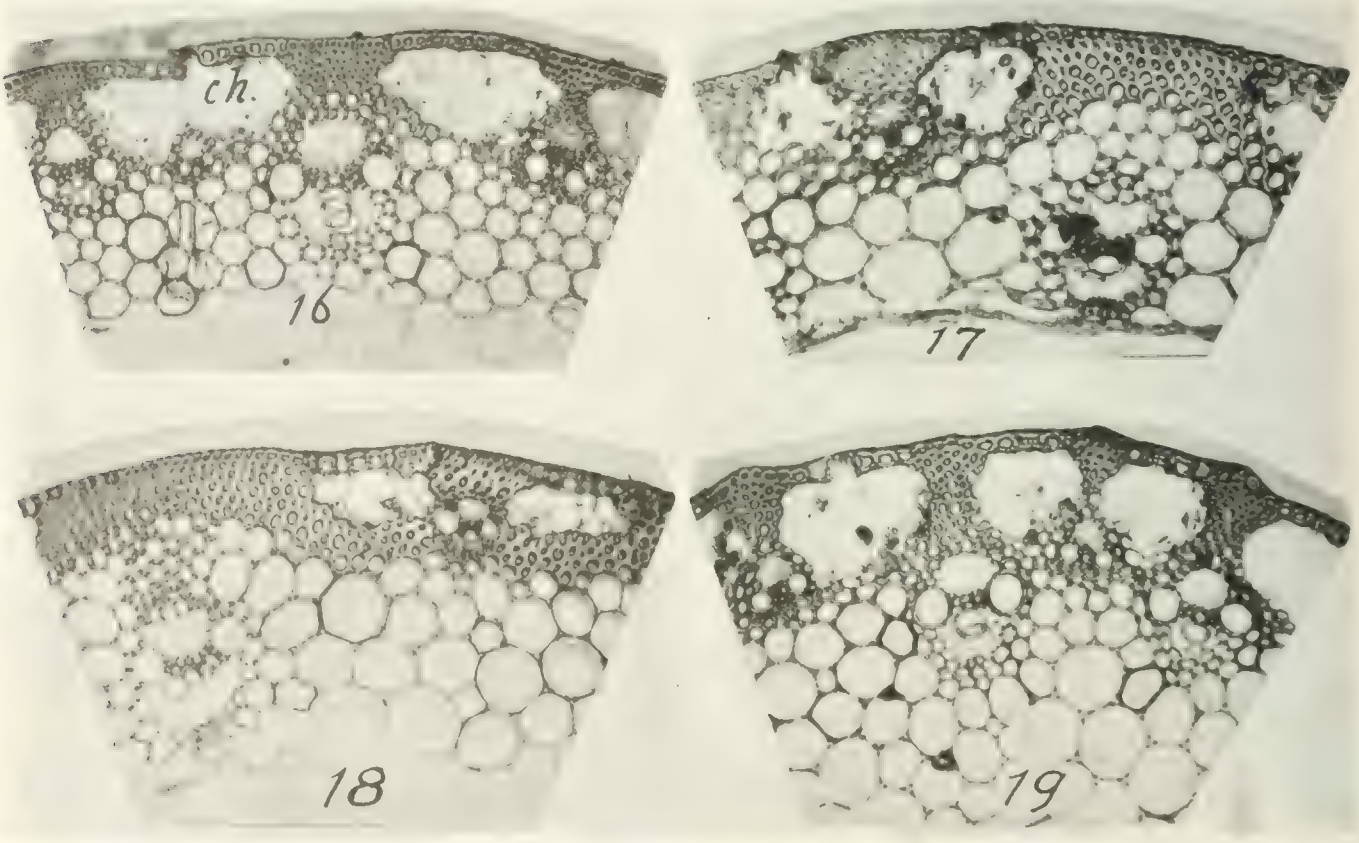
The chlorenchyma is best developed in the exposed upper part of the internodes, especially of the topmost slender internode which bears the grain (figure 4). As one descends an internode, the chlorenchyma becomes less and less conspicuous, until near the base it may not be present at all (figures 2 and 3). It has been noted above that there are here very few stomata, corresponding with the absence of chlorenchyma.

The "fluting" can sometimes be seen e.g. in wheat, by the naked eye to occur roughly in pairs. This is brought out clearly in a transverse section (figure 4). in which it is seen that the chlorenchyma strips are paired with reference to certain groups of cells (vascular bundles). Sometimes the neighboring strips of adjacent pairs run together, making a group of three; in other instances the spaces between the pairs are equal to the spaces between the members of a pair, so that the fluting is less obviously regular, but more so in some straws e.g., wheat, than in others.



Figures15 Diagram of a stoma seen in transverse section, barley.

The chlorenchyma in the lower internodes is more tangentially compressed than in the uppermost, is re-



Figures 16-19. — Sectors of transverse section of the terminal internode of barley, oat, rye and wheat, resp. x 146 — Ch., chlorophyll tissue space, the tissue disintegrated in these sections.

latively shallower and is more irregularly disposed. The topography as revealed in transverse sections is fairly characteristic for each of the grains (figures 16-19).

The Zone of Fibres (bast).—The longitudinal zones of epidermis devoid of stomatal pores are on the other hand underlain by a mechanical tissue composed of much elongated cells (fibres). To each zone, and lying just below the fibres, is a vascular bundle (figure 4). According to the age of the stem and to the vertical position, the extent of fibrous tissue varies, it being relatively greatest in the lowermost part of the internode, and bears an inverse relation to the chlorenchyma zones. Here the fibrous tissue underlies the chlorenchyma zones, thus forming a continuous layer of mechanical tissue around the whole stem, having an average depth of about 0.5mm (50 microns) (figures 3, 16-23).

Embedded in this layer is a tangential series of vascular bundles, one underlying each surface ridge and therefore between adjacent flutings. This is the zone of fibres, and it is the material which is chiefly important in paper making, although the other elements occur more or less according to the grade of paper.

The Pith (Fundamental Tissue).

We use this term to embrace all the remaining tissue lying within the zone of fibres, excluding the vascular bundles. The constituent cells are parenchyma about two or four times as long as broad (pa., figure 5), and relatively thin walled. The walls are for the most part however, quite rigid in the dry straw, and they contribute no small share to its mechanical qualities in this condition. Only at the innermost limits of the pith they are soft walled and lax. The condition is due to the dying off of the innermost pith cells as the cavity of the straw is formed during the development of the plant. The condition is well illustrated by the oat (figure 17).

Fibro-vascular Bundles.

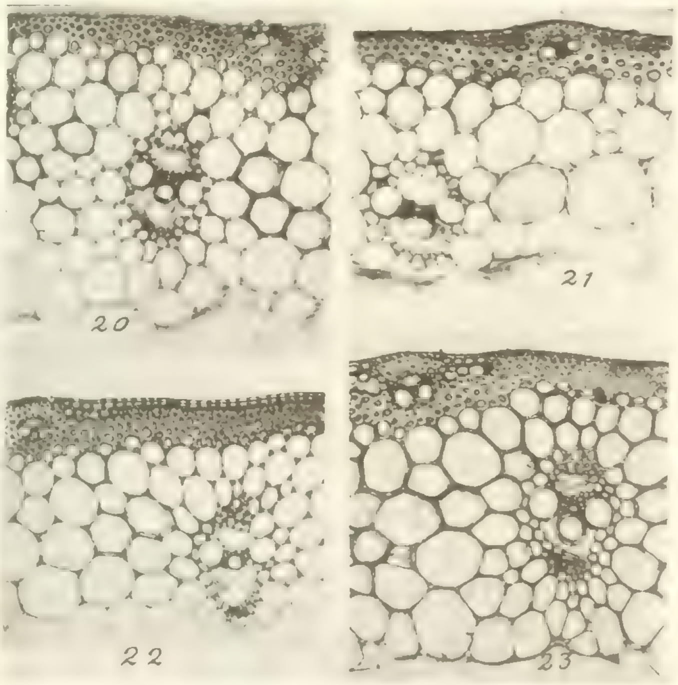
Lying in the pith is a series of vascular bundles of large size.[6] These bundles are of rather complex structure (figure 24), and have for their function the transportation of water and food materials up and down the stem and leaf of the plant. The portion which has to do chiefly with the movements of water is the xylem or wood (vessels) and can be recognized in the accompanying figure as four large openings disposed like the eyes, nose and mouth of the face, and surrounded by cells of much smaller caliber. The small thick walled cells between the eyes are also wood vessels. Most of the wood vessels can be recognized in pulp or macerated material by the numerous slit-like pits in the walls.

The wood-cells are primary and secondary—those first formed during the development of the stem, and those later formed. The first formed have very thin walls strengthened by rings or spirals (figure 5, **x**). With the elongation of the stem during growth the thin walls are ruptured, and the rings are in consequence spread apart longitudinally, as are also the turns of the spirals. In pulp, rings and spirals may both be seen. The secondary wood cells are thick walled, but penetrated by pits which are more or less oval or slit-like in form and regularly disposed in longitudinal series, suggesting the rungs of a ladder (figure 5). The ends of the wood cells are transverse or more or less oblique —at an angle of scarcely more than 45 degrees and are usually open, so that a series of cells make a continuous tube. Between the wood-cells with pitted walls and those which have only ring thickenings, there are various intermediate stages. On the two sides of the primary wood there are some very thin walled elongated wood cells with transverse or slightly oblique walls. These elements are of very delicate structure, and disappear readily under chemical treatment in making pulp.

Wood cells form but a very insignificant part of pulp, due to their originally small proportion and to the breaking up of the primary cells into the minute fragments in the shape of the aforesaid rings and spirals. The large wood cells (vessels) are about 40 microns in diameter (micron = 0.001 millimeter), while the small ones are about 7 to 8 microns, or thereabout, in diameter, roughly about one-fifth the diameter of the large vessels.

Placed radially and on the outside of the wood, forming as it were the forehead of the fase, is a small group of very thin walled cells with very narrow lumina (ph. figure 24). This is the phloem, concerned chiefly in the movement of food materials. The cells are of two kinds, seive tubes, which have thickened end walls, and more slender cells lying alongside them, the companion cells. Like the wood cells, they are elongated elements, very slender and delicate, and usually disappear during pulping, and contribute not at all to the final product.

Surrounding the wood and phloem is a narrow layer of fibres **f**, figure 24), or rather fiber-like cells, with pitted walls and somewhat oblique (about 45 degrees) or transverse end walls. The fibers on the outside of the phloem (between it and the epidermis) are numerous enough to form a small bundle. This is the case also on the inside of the xylem (toward the center of the stem). The lateral walls when seen longitudinally



Figures 20-23. — ectors of transverse sections of the middle region of the lower internode of barley, [illegible] and wheat resp. x 97.

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[6] There is strictly speaking more than one series, but for the purpose of this description it is unnecessary to distinguish between them.

are irregular when they impinge on the surounding parenchyma. While contributing to the "fibers" of pulp, they constitute only a small proportion of shorter elements.

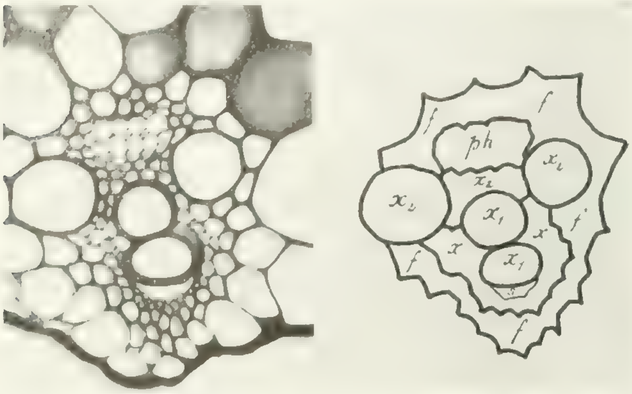

Figure 24. Transverse section of a single bundle from the stem of wheat. x 232: **f.**, fibers; **ph.**, phloem; **s.**, cavity formed by splitting of the tissues away from the primary wood trachea; **x_1.**, primary wood vessels (tracheae); **x_2.**, secondary wood vessels.

(To be continued.)

CANADIAN EXPORTS INCREASE.

Canadian pulp and paper exports for August reached a total value of $9,395,391, a decline of $8,863,336 as compared with August, 1920, but an increase of $2,628,835 over the preceding month of July. They were the highest for any month of the current fiscal year and appear to confirm the view that the tide has definitely turned in an upward direction. The shrinkage under last year's figures is more apparent in values than in volume as the following statement shows:

			August 1920.
Book paper	cwts.	5,994	$ 64,293
Newsprint		1,419,028	7,301,605
Other paper			1,380,919
			$8,746,817

			August 1921.
Book paper	cwts.	961	$ 11,349
Newsprint		1,306,429	6,015,305
Other paper			223,683
			$6,250,337

A comparison of pulp exports for the 2 months shows:

			August 1920.
Sulphate	cwts.	267,418	$1,284,365
Bleached Sulphite ..		191,690	1,598,001
Unbleached Sulphite		574,343	3,820,278
Groundwood		816,081	2,809,266
		1,849,532	$9,511,910

			August 1921.
Sulphate	cwts.	152,674	$ 587,664
Bleached Sulphite ..		187,945	834,445
Unbleached Sulphite		144,518	489,261
Groundwood		435,955	1,233,684
		921,092	$3,145,054

Countries of destination were: Paper, United Kingdom, $79,511; United States, $5,641,274; other countries, $529,552. Pulp: United Kindom, $879,354; United States, $1,909,491; other countries, $356,209. For the first 5 months of the current fiscal year, the comparative figures are:

	Paper	Pulp	Total
1921	$27,604,901	$12,121,739	$39,726,640
1920	35,170,271	35,582,503	70,752,774
1919	22,531,667	12,883,748	35,415,415

Pulpwood to the amount of 87,379 cords, valued at $1,178,038, was shipped to the United States during August, compared with 133,464 cords, valued at $1,695,038, in August, 1920. During the 5 months period the volume and value of pulpwood exported to the United States was as follows: 1921, 371,780 cords, valued at $4,882,365; 1920, 502,315 cords, valued at $5,756,464; 1919, 425,974 cords, valued at $4,205,118.

"I DUNNO."

"I Dunno," a new hand, came on one night. They put him next to me in the pulp room. I asked him a couple of questions about what he was supposed to do.

"I dunno," says he. He had the biggest grin I've ever seen. It must have been fourteen inches from tip to tip.

The next night I asked him how he was getting on.

"I dunno," says he.

I says to myself: "Well, it's all right for YOU not to know, but somebody's got to know, and I hope for the sake of that cheereo double-X grin that it's not the boss."

After a week of the grin and the "dunno" I, for just one buddy on that job, wished one or the other of them would disappear.

It did — I mean they both did.

I saw'em go.

And I heard the boss say: "If he'd said 'I DO KNOW' once, we could have kept him — just for the grin."

I got to thinking. And I wondered how many times in my life I'd said 'I DUNNO' when it might have been 'I DO KNOW.'

"I DUNNO" means: No money — No job — Failure — Disappointment — Unhappy families.

"I DO KNOW" means: Leadership — Money in the bank — Owning your home — Steady work in dull times — Happiness and Contentment.

— Copr. 1921 Babson Institute.

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Technical Section

REVIEW OF RECENT LITERATURE.

A-3. "Ashi" Fiber. M. ISHIKAWA, **Kôgyô Kwagaku Zasshi (J. Chem. Ind. Tokyo)** xxiii, 1153-7 (1920); **J. Soc. Chem. Ind.**, xl., 113A (Feb. 28, 1921. "Ashi" reed fiber resembles straw in regard to the kind of cells, chemical composition, and reactions. It gave the following analytical results: moisture 11.2 percent, water-soluble matter 3.78 percent, ash 1.24 percent, fat and wax 0.96 percent, lignin 14.7 percent, cellulose 49.8 percent, and pectin, etc., 18.32 percent.—A. P.-C.

A-14. Groundwood Pulp Determination. M. G. KOTIBHASKER. **J. Soc. Dyers and Col.**, xxxvii, 11-3 (1921); **J. Soc. Chem. Ind.**, xl, 113A (Feb. 28, 1921). The adsorption of para-nitraniline by mechanical woodpulp is constant under defined conditions, experiment indicating that pure mechanical woodpulp in thin slices treated with the reagent in the proportion of 2 Gm. to 40 to 60 Cc. of an approximately 0.1 per cent solution in dilute hydrochloric acid shows in 6 to 24 hours a constant adsorption of 0.56 to 0.57 per cent. The excess of para-nitraniline is determined by adding a known excess of titanous chloride to an aliquot portion of the solution, say 10 Cc., boiling to effect reduction, and titrating back the excess of titanous salt with standard solution of iron alum. By this means the mechanical woodpulp in an unknown sample can be determined with an error of not more than about 2 per cent. The adsorption of para-nitraniline by jute also shows a constant figure of 0.35 to 0.37 percent. —A. P.-C.

A-15. Fermentation of Cellulose. G. J. FOWLER and G. V. JOSHI. **J. Indian Inst. Sci.**, 39-60 (1920); **J. Soc. Chem. Ind.**, xl, 22A (Jan. 15, 1921). The conditions most favorable for the most rapid formation of the largest possible quantities of methane and hydrogen by the anaerobic fermentation of cellulose were studied with the object of making economic use of this form of potential fuel occurring in the form of waste paper and vegetable debris. The ferment employed was used in the form of a "bacterial emulsion" prepared from the sludge taken from the bottom of the septic tank of a sewage works. Normal celluloses were found to be most resistant, cellulose from lignified fibers were more readily, and hemicelluloses such as banana skins or plaintain skins most readily attacked. Schweitzer's reagent can be employed as a rapid test of the suitability of a cellulose material for fermentation. The efficiency and speed of the fermentation is a maximum only at a temperature near the optimum (55° Cent.), with a certain ratio of cellulose material and inoculant, and if the acid products of the fermentation are kept below 1 percent by fractional displacement of the liquor from time to time. By gradually "building up" the bacterial emulsion a daily volume of combustible gas equal to 30 percent of the volume of the fermenting material can be obtained with hemicelluloses. Small quantities of lead, copper, and zinc salts inhibit the fermentation. The gaseous products of the fermentation contain 80 to 85 percent of methane and have a calorific value about 1.45 times that of coal gas. The only soluble by-product that could be detected in the hemicellulose fermentation was acetic acid. It is suggested that the fermentation of cellulose waste products might probably be used as an economic source of power in such places as the western coast of India where coal is scarce. A. P.-C.

A-15. Conversion of Cellulose into Glucose: Constitution of polysaccharides. II. J. C. IRVINE and C. W. SOUTAR. **Chem. Soc. Trans.**, xcvii, 1489-1500 (1920); **J. Soc. Chem. Ind.**, xl, 76A (Feb. 15, 1921). In previous researches on the hydrolysis of cellulose the yields of dextrose which have been claimed have not been based on the quantity of the sugar or of a characteristic derivative actually isolated, and the statements made are unreliable. With the object of ascertaining whether cellulose is really essentially a polyglucose anhydride yielding the theoretical quantity of dextrose on hydrolysis, a normal cotton cellulose was hydrolyzed by means of acetic anhydride and sulphuric acid. The product was poured into water and the precipitate of polysaccharide acetates simultaneously hydrolyzed and converted into methylglucoside by heating in an autoclave with 0.5 percent methyl-alcoholic hydrogen chloride. About 25 percent of the material resisted hydrolysis by this method and was hydrolyzed with dilute aqueous hydrochloric acid and the product again brought into reaction with acid methyl alcohol. The water-soluble products first obtained were also converted into methyl glucoside, and in this way a total yield of pure crystalline methylglucoside was obtained in three distinct stages of progressively increasing difficulty, amounting to 85 percent of the quantity theoretically possible if cellulose consisted entirely of dextrose residues. Evidence of the non-uniformity of the dextrose linkages in celluloses is thus afforded by the variation in the ease with which the dextrose residues are eliminated from the polysaccharide by acid hydrolysis. The proportion of the cellulose molecule which is most resistant to hydrolysis agrees closely with that corresponding with the maximum yield of cellobiose octa-acetate obtained from cellulose, and this disaccharide apparently represents the most resistant portion of the cellulose molecule.—A. P.-C.

A-15. Decomposition of Cellulose by Aerobic Bacteria. J. GROENWEGE. **Med. Geneesk. Lab.** Weltevreden, 163-269 (1920); **J. Soc. Chem. Ind.**, xl, 76A (Feb. 15, 1921). There are two views as to the decomposition of cellulose in nature: one that it is anaerobic and brought about by organisms which are not positively determined; the other that it is aerobic and brought about by two groups of organisms, one group decomposing cellulose directly, the other group being denitrifying organisms. Extensive experiments were carried out from the second point of view, all the cultures being made aerobically. A septic tank liquid and earth were used as the sources of the organisms. The culture medium consisted of tap water to which were added 2 percent of filter paper, 0.25 percent of potassium nitrate, and 0.05 percent of dipotassium phosphate. When this medium was inoculated with either of the substances mentioned and incubated at 37° Cent. gas was given off, the nitrate was reduced to nitrite and to nitric oxide, and the paper was reduced to a pulp; if at this stage the solution was poured off from the pulp and fresh medium (without filter paper) added, reduction of nitrate again took place, and the pulp was gradually dissolved. The organisms in these cultures were sub-cultivated on agar plates and pure cultures obtained. These were found to fall into three groups: those which effected denitrification but did not attack cellulose; those which did not denitrify but attacked cellulose; and those which did neither. The first group contained **Bacillus viscosus** and **B. opalescens,** and the second group **B. Cellaresolvens** alpha, beta and gamma. Cultivations of each member of one group with each member of the other group were made and full details of the results are given. It is concluded that the three varieties of these **cellaresolvens** attack cellulose, and that the decomposition products serve as food for the denitrifying organisms, **B. Opalescens** and **B. viscosus,** the complete process being thus a symbiotic one. The end products of cellulose decomposition are acetic, butyric, and lactic acids, which are oxidized to carbon dioxide and water by the denitrifying organisms. It is suggested that the decomposition of the cellulose may be brought about by an enzyme, cellulose.—A. P.-C.

K-0. Perishing of Paper in Indian Libraries. J. J. SUDBOROUGH and M. M. METAH. **J. Indian Inst. Sci.,** iii, 119-226 (1920); **J. Soc. Chem. Ind.,** xl, 76A (Feb. 15, 1921). Paper in Indian libraries, especially in plains stations such as Calcutta, Madras, and Bombay, will not withstand the climate and perishes very rapidly. This is more noticeable with papers prepared from woodpulp, and especially those in which the fibers have been weakened because of the different treatments to which they have been subjected. The addition of arsenic trisulphide as a preservative is useless, because although it preserves paper from the ravages of insects, it accelerates the decay of the fibers. Paper used for books which have to be preserved in stations like those of the Indian Plains should be prepared only from strong rag fibers, should have no distinct acidity, and should withstand a severe test in the folding machine. Its contents of rosin and filling material should be below certain fixed values. The rag fibers should not be weakened by prolonged digestion with alkali or by over-bleaching, and care should be taken to remove the last traces of bleaching agent and of free acid.—A. P.-C.

L-5 Production of Cellulose Acetate. W. LEIGH BARNETT, **J. Soc. Chem. Ind., xl,** 8-10T (Jan. 31, 1921). The use of a mixed catalyst of chlorine and sulphur dioxide gives satisfactory results with the minimum amount of change in the parent complex. By suitably choosing the conditions for the reaction it is possible to obtain a great variety of pure esters, possessing valuable properties of strength, film flexibility, transparency and solubility. Acetylation proceeds at any temperature, and as no signs of discoloration occur, owing to the great ease of control of the reaction, no special precautions are necessary. The combined use of chlorine and sulphur dioxide is equally efficient in producing other esters, such as the butyrate, the benzoate (using benzoyl chloride in acetic acid), etc.—A. P.-C.

L-7. Apparatus for Spinning Artificial Silk. Can. patent No. 211,678, THE VISCOSE COMPANY, Marcus Hook, Pa., U.S.A., assignee of JAMES CLAYTON, Coventry, Warwick, England, May 17, 1921. Claims allowed 4. Also Can. patent No. 211,679, claims allowed 4.—A. P.-C.

L-7. Machine for Spinning Strips of Paper. Can. **patent No. 211,716,** THOMAS ALEXANDER BOYD and HAROLD ARTHUR BOYD, co-inventors, both of Glasgow, Scotland, May 24, 1921. Claims allowed 4. —A. P.-C.

L-0. Paper Spool. Can. patent No. 211.325, ROBERT S. BOLGER, Richmond Hill, N. Y., U. S. A., May 10, 1921. Claims allowed 31.—A. P.-C.

M-0. Apparatus for Indicating the Level of Liquids. Can. patent No. 210,476, GUISEPPE RATTI and PIETRO GERVASONI, both of Turin, Italy, April 12, 1921. Claims allowed 3.—A. P.-C.

M-0. Apparatus for Analyzing Flue Gases. Can. patent No. 211,201, HERBERT MEDILL SHARP, Buffalo, New York, U.S.A., May 3, 1921. Claims allowed 7.—A. P.-C.

N-6. Use of Fuel Oil. Monit. Papeterie, lii, 36-7 (Jan. 15, 1921), 66-8 (Feb. 1, 1921), 96-8 (Feb. 15, 1921). Brief review of the necessity for using fuel oil, its principal uses and properties, comparison with coal firing, methods of transportation and equipment used for burning it.—A. P.-C.

O-2. Rotary Suction Filter. Can. patent No. 211,270, THE UNITED FILTER CORPORATION, New York, assignee of ORANGE JAMES SALISBURY, Salt Lake City, Utah, both in the U.S.A., May 31, 1921. Claims allowed 17.—A. P.-C.

R-1. To Make Paper Pulp in Portuguese East Africa. J. Soc. Chem. Ind., xl, 52R (Feb. 15,1921). A concession has been granted to the Cia. Portuguesa de Papel Mocambique giving it the exclusive right to prepare pulp from native and foreign vegetable matter, and to manufacture paper and parchment in the province of Mozambique for a period of ten years. The company is to erect a mill at Ressano Garcia, near the Transvaal frontier, and utilize Tambuki grass, and possibly wood, as raw material. The syndicate which holds the concession for the manufacture of pulp from baobab trees in the Quilimane and Tete districts has been unable to sell its products to paper manufacturers in the United Kingdom, in spite of favorable technical reports. Some time ago it contracted to supply a Norwegian pulp company with 40,000 tons of material on a royalty basis, and since it has received numerous inquiries from Germany and the United States. —A. P.-C.

R-7. Winning Employees' Loyalty. WARFIELD WEBB. **Paper,** xxvii, 24 (Feb. 16, 1921). Description of the welfare work of the Champion Fibre Company at Canton, N. C.—A. P.-C.

R-9. Woodpulp Tariff Hearings. Paper, xxvii, 24 (Feb. 16, 1921). Arguments brought forward by the American Paper and Pulp Association in favor of a tariff of 0.1 cent per lb. on a mechanical pulp, 0.2 cent per lb. on unbleached chemical pulp, and 0.3 cent per lb. on bleached chemical pulp, together with those brought forward by the Association of American Woodpulp Importers, asking for a continuation of free pulp.—A. P.-C.

PULP AND PAPER NEWS

It seems probable, as has been previously indicated in these columns that the striking printers in Toronto, who belong to Local 91, International Typographical Union, will give its support to the Canadian Labor party, at the forthcoming general election. Indeed, these is some prospect of the Union's financing a daily newspaper, to support the Labor candidates. The strikers regard the situation which faces their Union as one which was created by the Canadian Manufacturers' Association. This last mentioned body is giving its support to the Meighen government, and the strikers, accordingly, declare that it is up to them to help to defeat the government. Enthusiastic supporters of the Labor party in the Typographical Union assert that Local 91 will give apponents to Labor candidates a hard row to hoe.

It is reported that several concerns have taken legal action against the Riordon Company in connection with the construction of the Kipawa Plant.

The Courtena B.C. "Review" prints a report from Campbell River, B.C., to the effect that a prominent English firm intends to acquire water rights and build a pulp mill within a reasonably short time in the vicinity of Campbell River. Several Vancouver business men are said to be interested.

The rossing plant at Murray, St. Ann's, C.B. are closed down, although, if there is water enough in the river, a fall drive is expected. (This plant is almost invariably referred to by newspapers as a Pulp Mill. It is a cutting up and rossing plant installed by Canadian Ingersoll Rand. There is no pulp mill on the island of Cape Breton.—Ed.)

The Sorting Gap and Slasher Mill activities of the Belgian Industrial Company have closed down for the season.

Plants are to be erected in Vancouver and Victoria by the Canadian Producers' Corporation, which has been organized for the purpose of handling lumber and its by-products. The orders received by the Corporation will be distributed to local mills to fill, and shipment will be made from the Corporation's plants.

Mr. Edward Beck, in charge of publicity of the Canadian Pulp and Paper Association, last week addressed a letter to the press, supplementing a previous communication from him on the same subject, relative to the Australian tariff preference on British paper. As Mr. Beck indicates, the British government, in obtaining this preference, have practically destroyed the Canadian export trade to Canada — and it certainly does not transgress the proprieties of fair comment when contrasting their action in this regard with the honeyed words of Mr. Ben A. Morgan, the missionary in Canada of inter-Imperial trade. But after all, it is against the Canadian government that the paper manufacturers of Canada have their main cause of complaint. Mr. Beck's recent letter clearly demonstrates that the Dominion government received ample warning that this great Canadian industry was in danger of losing its Australian market. But it did not make any adequate effort to reach such a trade agreement with Australia as it would have sufficed to protect Canadian interests. The bill which will give legislative form to the resolution discriminatory, in favor of Great Britain, against Canadian paper imports, has passed the Australian House of Commons and next month, will be taken into consideration by the Australian Senate. It is true that when the bill was passing through to Australian House of Commons, the Canadian paper manufacturers took steps to acquaint that body with the effect which its passage would have on their export trade. But, inevitably, their intervention lacked the weight that would have attached to intervention from the Canadian government—for this reason, among others, that the necessary authority to negotiate such a trade agreement as would have safeguarded the interests of the Canadian export paper trade did not reside in them. For its policy of "laissez faire," the Canadian government merits little thanks at the bonds of Canadian paper manufacturers—and especially at this juncture when the need for every possible outlet for the products of Canadian paper mills is being increasingly felt by the industry at large.

The annual meeting of the United Typothetae of America (Toronto branch) was held last week. It reappointed the members of the Defence Committee which was organized to combat the strike. But it was announced that, beyond a casual reference to the strike, no discussion of the present trouble took place at the meeting.

At the invitation of the pastor of Perth Avenue Methodist Church, Toronto, Mr. James Simpson, the Socialist leader, who acts as a spokesman for the striking printers, stated the latter's case to the members of that church, last week. He asserted that the Typothetae has consistently lied in their advertisements in public press about the conditions of the present strike of members of the Typographical Union. " The members of the Typographical Union at present on strike," said Mr. Simpson, "are out because they believe the promise of the master-printers that the forty-four hour week would go into operation on the 1st of June 1921. The master-printers broke faith, and the strike is a result of that."

On the other hand, Mr. W. A. Sutherland, the secretary of the Toronto Typothetae, and the Rev. Dr. S. W. Fallis, steward of the Methodist Bookroom and chairman of the Defence Committee of the Toronto Typothetae, flatly deny this charge of broken faith. Said Dr. S. W. Fallis, last Saturday: "That is not true. We have stated again and again in the press that the only undertaking in the direction of forty-four hours for the 1st of June 1921 was made by a small section of the Typothetae." In substantiation of his statement, Dr. Fallis proceeded to quote the following from "The Living Church," of Milwaukee, a church paper which, he said had found itself involved in the same struggle as the Toronto Typothetae: "A group of closed shop employers, chiefly from New York and Chicago, meeting apart from the organization, and not representing the whole organization, agreed that they would establish the forty-four hour week in their respective shops in the spring of 1921. Those who thus agreed undoubtedly committed themselves to that policy, and there were enough of them to secure a fairly general adoption of the shorter week, last spring in these two cities. Closed shops in New York and Chicago have, therefore, not become involved in the strike. But that the craft generally was not committed to that policy was made clear by a resolution of the Typothetae itself at a subsequent annual meeting. The shorter week was not acceptable to employers generally. These hold, with experts in social economies generally that forty-eight hours a week constitutes the standard working period that should be retained. Thus, scarcely any employer outside those two cities and not nearly all within them, was committed to the forty-four hour week.'' Dr. Fallis added that the allegation ''that any such promise was made in 1919 by the negotiating committee of the Toronto Master Printers 'Association has been denied again and again in the form of a declaration to which is attached the signature of every member of that committee, all of whom have signified their willingness to make an affidavit if necessary.''

Damage estimated at between $75,000 and $100,000 was caused by a fire which broke out on Wednesday of last week at Ste. Cecile, about nine miles from Lake Megantic. It is stated that the fire was evidently the deliberate work of incendiaries, fer the flames are said to have broken out at four different places at almost the same time. Several thousand cords of cedar shingles, four hundred cords of pulpwood and several thousand feet of hardwood were destroyed, while a saw-mill and nine houses were badly damaged.

While, pretty generally, in spite of the much lower wages being offered this year than last year, for work in the woods, there has been little difficulty in getting labor, on account of the prevalent unemployment, this has not been the invariable experience everywhere. For instance, work in the North Bay district recently offered for 350 bushmen, and it was found necessary to seek the help from Sudbury, as it was not forthcoming from North Bay.

There is an expectation that some of the larger newspapers in Ontario may reduce their price now that newsprint will cost them less. There is certainly no reason why they should not. They were quick enough to ''jack up'' the price as soon as they got an excuse for it. And two cents coupled with the increased price (as compared with that of a very little while ago, which these newspapers are charging the advertiser, has made any properly run newspaper, with a good circulation, a very paying proposition—particularly as the weaker sisters are, many of them, getting out of a game which, lacking adequate financial backing and (very often) horse sense as well, they should never have got into. Papers run properly are proving regular gold mines—and one does not have to go a hundred miles from Toronto to verify this. But few of them are worth two cents. And, anyway, a reduction in price would unquestionably make for an increase in consumption of newsprint.

Mr. A. L. Dawe, Secretary of the Canadian Pulp and Paper Association, spent a few days in New York last week.

Supt. R. Muir of the Brompton Kraft mill fractured his leg in a fall down stairs at the mill. Edmond Roi was injured by being hit by the coal unloading bucket.

Some time ago we printed a cartoon of Mr. J. A. Bothwell as a horseman. That was no joke; the Belgian and Clydesdale horses of the Brompton Pulp and Paper Co. won 26 prizes, including a championship, at the Sherbrooke and Quebec Exhibitions.

After being shut down for two weeks on account of repairs, the No. 1 paper machine of the Belgian Industrial Co. is humming again, No. 3 machine has also been down a week for the same reason.

QUARTER MILLION CORDS FOR SALE.

''We learn'' says the St. John's, Nfd., Telegram, ''that the quarter of a million dollars worth of pulp wood which was the cause of so much discussion during the last session of the Legislature, and which the Government announced as sold to a West Coast firm, is still lying on the banks, the purchasers evidently falling down on the deal. Only a small portion of this wood, which was cut last winter in relief account, has been sold, although the Government had good offers for it. It is said that our Commissioner at New York has for some time been trying to find a purchaser, but getting in the market too late to make a sale it seems now that the country will have to saddle a heavy loss.''

Here is a chance for Mr. Bellew to pick up a couple of years requirements on that contract for Holland that he expected to cut in Labrador.

BRISTOL BOARDS AND PASTED COVERS.

A significant announcement made this week is the advice that the Cornwall plant of the Howard Smith Paper Mills has completed the installation of a new pasting machine, which will be in full operation this week. Not only will the output of the mill be somewhat increased, but what is more important, there will be available in Canada a line of Canadian made covers and Bristol boards of high grade and in sufficient variety for the high standard of catalogs, plates, etc., which advertisers and other users now demand. The recent completion of their sulphite mill will enable the company to manufacture this product economically and to command a supply of specially prepared pulp.

TEN PAPER POINTERS.

In 1920 there were 1,653 paper machines in operation in the United States. In 1921 there are 1,706, and in 1922 there will be at least 1,710 machines.

There are 818 paper and 322 pulp mills in the United States.

In 1920 the paper industry in the United States passed the billion dollar point in value of output.

Book paper leads the industry in value of output, with a product worth $220,000,000 in 1920, and Board and Wrapping had a close race for second place.

Additional pulp capacity is projected by twenty-three United States manufacturers and sixteen in Canada.

The tonnage of paper produced in 1920 was 7,334,614, with Board leading, the total being 2,313,449 tons News, Book and Wrapping following in order.

Motion pictures showing the manufacture of paper are being made available for distribution by the American Paper and Pulp Association, to educate the public to the importance of the industry.

Paper mills for the first six months of 1921 averaged 57 per cent of capacity.

A German paper machine tender receives 7 cents an hour, figuring the German mark as being worth 1.4 cents. Other employes receive about one tenth of the American wage.

The capacity of American paper mills in 1921-22 will show an increase of 9.6 per cent over 1920

UNITED STATES NOTES

Federal Labor Department reports from 51 paper mills showing the employment and wages paid in these mills during the months of August 1920, and August 1921, give the following index of conditions in the industry. In August, 1920, there were 26,246 persons employed in these mills, dropping off to 17,387 in August of this year, or a decrease of 33.8 per cent. August, 1920, as compared with $428,404 in August, 1921, a decrease of 46.9 per cent. Figures bearing on a comparison between the months of July and August of this year indicate a 1.7 per cent increase in employment in August over July and 4.1 per cent wage increase.

Trouble is again being experienced by plants at Holyoke, Mass., due to low water in the Connecticut River. The headgates of the Holyoke dam have had to be closed on several occasions recently, causing paper mills and other manufacturing plants to suspend operations temporarily.

S. L. Bush, president of the Cost Association of the Paper Industry, is at work on the revision of the report issued by the Cost Committee at the conclusion of its investigations started in 1918. This is being done with a view to making the findings available in comprehensive form for the coming convention of the Association at Chicago. It will be issued under the title of "A Budget Cost System for Paper Mills," and cost men in general may obtain valuable suggestions from its pages. Copies of the report will be issued to members of the Cost Association free of charge, while the charge to non-members will be $10 a copy. Every effort is being made to insure delivery of this report in time for the convention. Mr. Bush is scheduled there for a detailed talk concerning the work.

Support of a tax revision program involving repeal of the special discriminatory war taxes on many lines of business, and the substitution of a flat tax on all finished commodities sold or leased by manufacturers, producers or importers, was voted by representatives of United States manufacturing interests who conferred last week at Washington. No specific rate for this manufacturers' tax was proposed formally, but discussion revolved around a maximum of three per cent. Spokesmen for the conference explained that the proposed tax is not a general sales tax, inasmuch as it does not bear on retail or middlemen's sales. It would be imposed at only one point in the process of production, that is, when the manufacturing process is completed, consequently the tax could not be pyramided or passed on in expanded form. The program endorsed represents substantially the proposals of Senator Smoot, who will soon introduce a new tax bill as a substitute for the measure which has been passed by the House and is now pending before the Senate Finance Committee.

The Connecticut Valley local division of the Cost Association of the Paper Industry at its recent Fall meeting in Holyoke, elected the following officers for the ensuing term: Ralph H. Morrill, Chemical Paper Manufacturing Company, President, John N. Hazen, Taylor-Logan Company, Papermakers, vice-president; and Joseph T. Daly, American Writing Paper Company, secretary-treasurer. J. A. Reilly, the retiring president, reported a very successful year. S. E. Seaman, of the Stamsocott Company, manufacturers of cotton linters, gave an interesting talk on the methods of preparing this raw material for use in the paper industry, the advantages of manufacture to be obtained from its use, and particularly the advantages of cost.

Oscar H. Betts, Ezra A. Doster and Arthur J. Buss were elected to the executive posts of president, vice-president and secretary-treasurer respectively of the Bethlehem Paper Company at a meeting of stockholders held recently at Bethlehem, Pennsylvania.

A horizontal wage reduction of 10 cents an hour and changes in working hours, substituting two shifts for three, were among retrenchment measures recently put into effect by the Continental Paper Company, Bogota, New Jersey.

Paper salesmen of New England had a very successful get together at Boston recently on the occasion of their first formal gathering since the formation of the New England branch of the Salesmen's Association of the Paper Industries. President H. H. Reynolds of the division, Dr. Hugh Baker, secretary of the American Paper and Pulp Association and other well known paper men delivered adresses. While the main topic was salesmanhip, optimism as to future conditions in the industry was expressed by most of the speakers.

Denials have again been entered by the International Paper Company officials of reports that the company will deal with the union members who have failed to resume on the basis of terms announced by the company May 24. At the Orono, Maine, mill, a notice to this effect was posted last week after it had been stated that the company had something to offer to strikers in the way of negotiations or offers.

RESIGNATION OF SECRETARY KEENAN.

Thomas J. Keenan has announced his resignation as Secretary-Treasurer of the Association in order to accept the position of editor of "Paper," in the reorganization of which he becomes an officer and stockholder. As a few weeks may elapse before a successor to him as secretary and treasurer of the Association can be chosen, Mr. Keenan will carry on the work of the Association in the interval. Mr. Keenan has been the keystone of the organization since it inception.

The question of a reduction of the annual dues of Active and Associate members from $25 to $15 was discussed at a recent meeting of the Executive Committee and a motion was adopted by which the Secretary-Treasurer will be instructed to bill Active and Associate members for next year's dues at $15. The dues of Junior members will remain at $5.

Announcement has already been made of the removal of the Secretary's office to 18 East 41st St., so as to facilitate co-operation between the Technical men and the American Paper and Pulp Association. The closeness of the Technical Section to the Canadian Pulp and Paper Association has been shown to have many distinct advantages and largely accounts for its great success.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 24th Sept.—It is a long lane that has no turning. And it now looks as though the pulp and paper industry, so far as its export trade is concerned, had turned the corner of the long lane of depression which it has been traversing since the begining of the year. Last month's exports were higher than those of any month in the current fiscal year. The value of last month's exports of pulp and paper was $9,395,391, being an increase of $2,628,835 over those for the month preceding. As compared with August of last year, however, there was a large decrease. But, of course, last year was the boom year. And in any case, the shrinkage in last month's figures, as compared with those of August, 1920, was really more in value than in volume. In the case of newsprint for example, the volume exported last month was 1,306,429 cwts, as against 1,419,628 cwts., exported in August of last year. But the value of the newsprint exported last month was $6,015,305 as compared with $7,301,605 which was the value of the newsprint exported in August, 1920. As regards pulp, there was a marked decrease last month, as compared with the same month last year, in the exports of sulphate and both bleached and unbleached sulphite, while there was also a falling-off in the exports of groundwood.

The tone of the industry generally is, too, improving, so far as the domestic trade is concerned. This is attributable in part to the improvement in tone, although as yet insufficiently substantial and of far from assured permanence, which is being exhibited in business as a whole. Several industries, which make considerable demands on paper of various kinds, are brisking up appreciably. Then too, the Canadian National Exhibition undoubtedly had a stimulating effect on business generally which has indirectly reacted beneficially on the paper industry in addition to which it directly helped that industry by bringing many buyers to Toronto. These placed many orders which, in the aggregate, made up a fair volume, though one has frequently heard a little disappointment expressed that the orders in question were not as big as they might have been. Nearly all the orders being placed are "hurry" orders, from which it may be deduced —as, indeed, is notoriously the case—that stocks, in the hands of wholesaler and consumer alike, have been allowed to get unusually low. One reason that may account for the orders that are being placed not being as large as the mills could do with, is probably to be found in the reductions that are taking place in price. In several lines there have been reductions and nobody knows what a day may bring forth in this way. There can be little doubt that this state of affairs, which has been brought about by a rather curious combination of circumstances, militates against the giving of orders of the desired magnitude. At the same time, it is unquestionable that, along with falling prices, orders are increasing in number. This is a further proof that, in most lines, stocks have been suffered to become inconveniently depleted. For, as a rule, it is when the price is rising that buyers are apt to come into the market in large numbers.

On the whole, it may be said with truth that conditions look a good deal better, and prospects brighter, than they have done for some months. The circumstances which have combined to bring about price reductions—such as American competition of a rather unusual kind—are of a more or less temporary character. The mills are busier than they have been for quite a while. A better tone is in evidence. And a trade that may be described as "from fair to good" is being anticipated, with some confidence, for the fall.

PULPWOOD.—In spite of a fair volume of enquirers, the orders in contemplation for pulpwood are not likely to bulk big. Of real demand there is very little evidence. Nearly all the mills have sufficient stocks on hand to meet their requirements for the coming season. As regard prices, these vary immensely according to the location. Above North Bay the price for peeled spruce is $9 a cord, while south of that point a third as much again and more is being asked.

PULP.—There is little demand for pulp, although there have been some evidences, within the last few days, of increasing activity. As regards both chemical and groundwood pulp, prices are not changed, but exhibit some small tendency to the development of a firmer tone. In this line, too, the orders that are coming forward are only for immediate requirements.

NEWSPRINT.—With the price of newsprint fixed at $80 per ton for the last quarter of the year, there is a better feeling in the newsprint market. There seems a general impression that business will go on improving from now on. Newspapers, in some cases, are contemplating a big drive for increased circulation which will no doubt, be productive of increased consumption of newsprint. So far as Toronto is concerned, the continued circulation of its four daily newspapers is almost sufficient to provide a paper for every man, woman and child in the city. But, of course, they have a circulation outside the city—in the case of one of them, at any rate, a large circulation right through rural Ontario. An then, of course, very many households take both a morning and an evening paper. Moreover, if the increasing improvement, which is being predicted in general business, materializes, this, as resulting in expansion of advertising, will also help to ensure an increased consumption of newsprint. Mills for the most part, have a satisfactory volume of business both on hand and in sight.

BOOK PAPERS.—Orders are coming in fairly well —very well as regards number, if still too slender in size. In many lines of book, writing and local papers there has been a general reduction, due in part to American competition, and in part to urgent demand for reduction put forward by the Canadian consumer. On papers up to ten cents the price in effect is now reduced by half a cent a lb. There is a reduction of one cent a lb. on papers above ten cents to fifteen cents. And, above fifteen cents, there is a drop of one and a half cents a lb. With both enquiries and orders on the increase, as they are, these price reductions should result in a substantial improvement.

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TOILETS AND TISSUES. The ten per cent. reduction on toilets and tissues, which was largely due to external competition, has had no detrimental effect on business in these lines. Indeed, quite the opposite would seem to be the case, for the mills report that they are busy and that the orders ahead are satisfactory. There has also been a reduction of ten per cent. in the price of paper bags.

WRAPPING PAPERS. — Orders continue to come in with gratifying improvement for wrapping papers, particularly for kraft. The business done in kraft has been on the mend for some time, and it gives every promise of expanding largely. But purchasers would do well to get their orders in early. For there is a risk lest holding off too long should prejudice the fulfilment of their orders, should a multitude come in simultaneously. At Christmas, last year, this was the case, and a repetition of this mistake should now be avoided. It is true that usually at this time of year there is an increase in the demand for wrapping papers, but, unless those in a position to judge are greatly in error, the present jump in demand is but the precursor of a busier season.

NEW YORK MARKETS.

New York, September 24—(Special Correspondence) —Activity in the paper market is steadily on the increase. Reports coming to hand this week from various sources have been very encouraging and indicate that matters in the manufacturing, distributing and consuming divisions of the industry are showing consistent improvement. Buyers are gradually broadening the scope of their operations, and mills generally state that they are booking a greater number and volume of orders than in a long time. A significant feature is that demand for those several kinds of paper which have advanced somewhat in price recently has undergone quite a spurt, indicating that buyers in numerous cases have held off in absorbing supplies simply because of the trend of prices, the strengthening of values therefore bringing them again into action.

Kraft papers are showing considerable life and appear to be moving in larger amounts almost every day. It is a fact, according to reliable reports, that some kraft wrapping mills have sufficient orders on their books to keep them fully engaged for a period of two months or longer, while others are securing enough business to warrant maximum production for the present at least. Prices on kraft wrappings evince an upward tendency not withstanding that a advance of half a cent per pound was put into effect a few days ago. No. 1 domestic kraft is quoted firmly at 6 cents f.o.b. New York, and the No. 2 grade at 5.50 cents, and jobbers say that mills are reluctant to make promises regarding near deliveries owing to their sold up condition. It is not uncommon for demand for kraft wrappings to broaden substantially at just this time of the year when department stores and retail merchants in general lay in stocks to carry them over the pre-holiday shopping season, when consumption of wrapping paper is at its height, but the pick up in demand this year was more welcome than ordinarily because of the long-drawn out period of dullness which manufacturers have passed through.

The newsprint market seems to be holding its own. The new contract basis is due to become effective the end of next week, and is expected to lead to increased buying by publishers. Proof is not wanting that consumption of print paper is on the rise throughout the States. Here in New York practically all of the daily newspapers are printing larger issues than in some months, which shows that advertising is increasing and that more newsprint is being used. Another factor that should not be lost sight of is that newspapers in various parts of the country are reducing their prices from three to two cents, and even to a penny in come cases, and this will lead to an appreciably larger consumption of newsprint. When New York newspapers jumped from two to three cents last year, circulation of the combined afternoon dailies fell off well up into the hundred thousands. With prices back to where they were, the probabilities are that circulation will also return to its former level.

A report issued this week states that the International Paper Company is now producing 500 tons of paper daily, of which about one-half is newsprint. The company expects to increase its output to about 700 tons per day within the next week. It is said that the company is getting very close to the point where it is producing enough paper to meet its requirements, having had to buy some paper to meet contracts since the strike in its mills, thus indicating that the labor difficulty is being smoothed over very nicely. Evidently inspired by the example set by the I.P., another paper company in the U.S. is reported to have withdrawn its recognition of the union and declared for the open shop. The International is said to be paying higher wages than any other group of paper mills in the country, with the exception of a single newsprint company and one or two small concerns, special conditions prevailing at these places. Demand for bag paper is increasing and the I.P.'s big bag paper mill at Rumford will probably soon be put in operation.

Tissues are quotably firm and are in good demand.

Scandinavian American Trading Co.

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Have an extensive and steady market for

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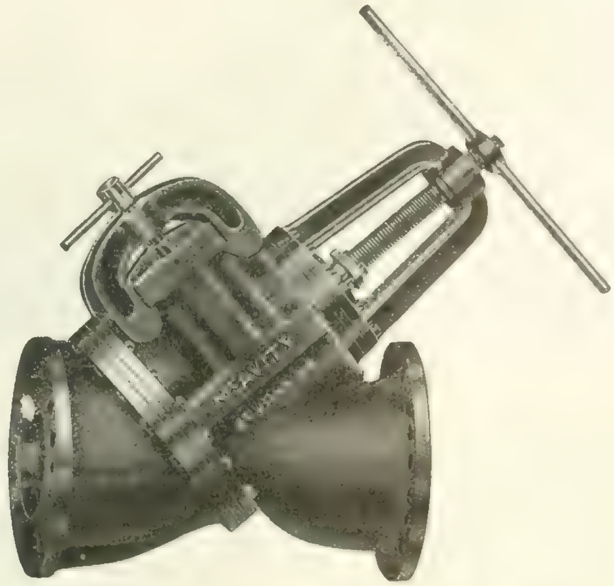
When you have any surplus to offer write us



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Fine papers are steadily working into a firmer market position and are moving into consuming channels in much larger amounts than in a long time. Book papers are in comparatively quiet demand. Printers are taking supplies in small lots, owing to dullness in the printing trade, and magazine and periodical publishers are still experiencing slow times and are consuming less paper than usually. Manufacturers of book papers are leaving no stone unturned in their efforts to obtain as large a part as possible of such business as is to be had, and this condition obviously makes for an easy price tone. Sales of machine finished book paper at 5.75 cents per pound f.o.b., New York are reported from time to time, and buyers are having little difficulty in securing supplies at 6 cents.

Box boards continue to move up in price and the market is acquiring strength every day. Some mills in the East are now quoting up to $40 per ton f.o.b. New York on plain chip board and $45 on news board, though the bulk of business current is at slightly under these figures. On the other hand, $35 is about the minimum price named on chip and $40 the lowest on news board.

GROUND WOOD.—Mechanical wood pulp is quotably firm between $29 and $30 per ton f.o.b. pulp mill the figures commonly named by large domestic and Canadian grinders for prime spruce ground wood freshly ground. Once in a while a sale is reported at a trifle under these prices but not much pulp is to be had for less; in fact, most producers are disposed to ask $30 or higher for sizeable tonnage for prompt shipment. Some rather cheap lots of foreign ground wood have been reported placed on the market, the prices mentioned ranging down to $23 a ton ex the dock, but it is declared that pulp available at such prices is unusually dry and therefore is not of as good quality as moist ground wood. Reports state that production has increased but little, if any, and that mill stocks are diminishing. Water conditions are scarcely improved, it is said, and some grinders are compelled to run on a very low schedule.

CHEMICAL PULP.—There is a tendency toward firmness in the chemical wood pulp market. Prices, aside from those on kraft pulp, have shown no advance of consequence, but sellers—including both domestic producers and importers—are firmer in their attitude and are not exerting as much pressure on customers as formerly. Kraft pulp is unmistakably stronger in price. Domestic manufacturers are quoting 2.50 cents per pound or higher on No. 1 kraft f.o.b. pulp mills, and Scandinavian kraft is held for 2.25 to 2.40 cents a pound on the dock here. The anti-dumping agitation appears to have had more influence on kraft pulp than on any other division of the trade, though it has served to stiffen quotations on foreign sulphite as well.

Prices on domestic pulps hold at about previous levels. No. 1 bleached sulphite is quoted at 4.25 cents per pound at pulp mills, soda pulp at 4.25 cents, unbleached No. 1 sulphite at about 2.75 cents; and news grade sulphite at 2.50 cents, or a trifle less. A sale of 1,000 tons of news sulphite by a Canadian mill to a newsprint concern in the vicinity of New York at slightly under 2.50 cents was reported several days ago, this pulp to be transported by water.

RAGS.—For the first time in months, slight advances in prices on some kinds of papermaking rags were recorded this week. Roofing rags have moved up a bit in value, sales to felt mills at 90 cents per hundred pounds f.o.b. New York No. 1 roofing and 80 cents for No. 2 packing being reported, while in the West mills are reported paying 1.10 cents for No. 1 roofing stock. New cuttings are firming, with white shirt cuttings held by dealers at 9 cents a pound at shipping points, unbleached muslins at 8 cents, white lawns at 7.75 cents, washables at 3.50 cents and blue overall cuttings at 6 cents. Old whites and blues continue relatively quiet and unchanged in value.

PAPER STOCK.—Old paper prices are still hopping upward at a fairly rapid rate. It is openly acknowledged by dealers that consuming mills in frequent cases are refusing to meet the advanced prices asked, but nevertheless the market is climbing, which would infer that other mills are paying the higher prices demanded. Old books and magazines have sold this week at 1.50 cents a pound f.o.b. New York, and this is about the lowest price now named by dealers. Old kraft paper has realized 2 cents a pound at shipping points, with blank news cuttings at 1.75 cents, folded newspapers 70 cents, No. 1 mixed papers 50 to 55 cents, box board cuttings 60 to 65 cents, ledger stock 1.65 cents, and No. 1 manilas 1.10 cents. Shavings are held with such firmness and at such a wide range of prices that it is difficult to say what definite market values are. It appears probable, however, that mills can buy strictly No. 1 packing of soft white shavings at 2.75 to 3 cents a pound at shipping points, and No. 1 hard white shavings at 3.25 to 3.50 cents. Shavings are unmistakably scarce, and this is one of the factors helping to "bull" the market.

OLD ROPE AND BAGGING.—The market price of old manila rope has become firmly established at 4.25 cents a pound f.o.b. shipping points, and some mills are said to have paid slightly in excess of this price. There is a steady demand for rope, and dealers complain of the small supplies coming forward from producing sources. Old bagging shows a firming tendency though quotations are unchanged at about 75 cents a hundred for No. 1 scrap bagging f.o.b. New York, $1 a hundred for gunny and 60 cents for roofing.

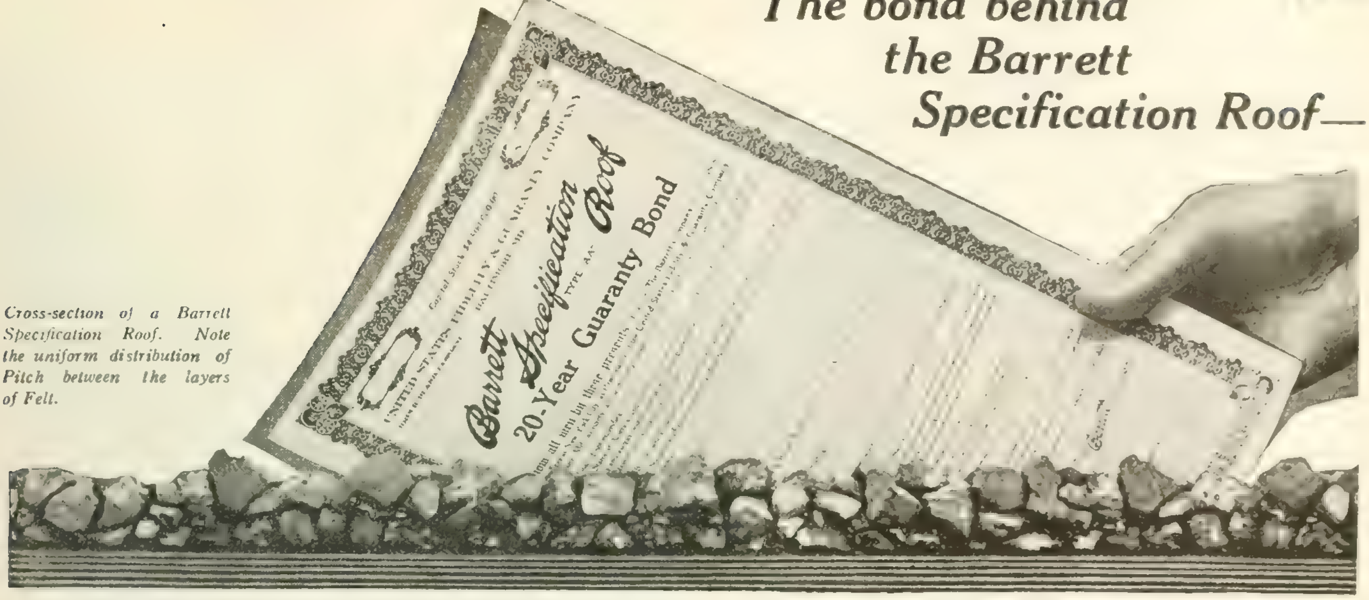
HOWARD SMITH DIVIDEND.

The directors of Howard-Smith Paper Mills, Ltd., have declared the regular quarterly dividends of 2 per cent on both common and preferred stock. Officials report business distinctly improving. Orders for the better grades of book and other paper are larger and more frequent than they have been for some time, and they are usually accompanied by demands for rush shipment which is taken to be an excellent indication that stocks through the country are low. It is their opinion, too, that prices are likely to hold up unless unexpected declines in the cost of production should make it possible for the manufacturers to announce reductions.

A new company, to be known as the Ajax Paper Company, capitalized at $10,000 has been formed in Chicago with the object of engaging in paper stock jobbing and manufacture. The incorporators are: Louis Rosenberg, Victor W. Grossman and George Rosenberg. The concern will locate at 2143 South Loomis Street.

The difference between one man and another is not mere ability — it is energy.

The bond behind the Barrett Specification Roof—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EVERYONE admits that a bond issued by the United States Fidelity & Guaranty Company is surer protection against roof repair expense than any guarantee.

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They're wrong! The bond does keep the roof from leaking. For the bond behind The Barrett Specification Roof is more than insurance against maintenance expense—

It is positive proof that the roof was laid by a roofing contractor who has earned a reputation for honest, dependable work. For only such roofers are permitted to lay Barrett Specification Bonded Roofs.

It is positive proof that a Barrett Inspector was present on the job—present to see that the highest grade pitch and felt were used in quantities sufficient to give maximum strength and durability—present to see that the heavy top coat of pitch was *poured* and in it the gravel or slag surface was properly imbedded to insure as high a degree of fire protection as any roof can possibly provide. Barrett Specification Roofs take the base rate of fire insurance.

When a roof is built by a reliable roofer and in strict conformance with The Barrett Specification, it is practically impossible for leaks or other roof troubles to develop until long after the expiration of the 20 or 10 year bonded period.

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Barrett Specification Roofs

Bonded for 20 and 10 Years

PULP POSSIBILITIES IN THE KOOTENAYS.

By LUKIN JOHNSTON, in the Pacific Coast Lumberman.

Some months ago, at the request of the Nelson Board of Trade, Mr. Henning Helin, the well known general manager of the Western Canada Pulp and Paper Company, visited the West Kootenay district in order to report on the prospects and possibilities for the establishment of a pulp and paper industry at or near Nelson. This was in October last, and while, since that date, conditions in the pulp and paper world have become highly disorganized, yet the establishment of the industry in that section of the country in due course seems certain.

Mr. Helin thoroughly investigated the matter from all angles. He inspected sections of timber which would furnish the raw material for the industry, investigated various sites and went carefully into questions of transportation which would have a bearing on the industry. His report is highly favorable and is worthy of some notice, for, as time goes on, the attention of the industry will fasten on those portions of British Columbia where there are still large reserves of timber suitable for pulp making and where water-power and other conditions are favorable.

On the 11,200 square miles of territory tributary to Nelson from which supplies of timber could be drawn, there are estimated to be more than 5,000,000,000 feet of pulpwood. If the lakes and valleys within a distance of 40 miles are taken into consideration, the amount would be much greater. The figures of the Forestry Department, backed up by independent cruises, show 50 to 60 per cent. of hemlock, spruce and white pine. The rest consists of balsam, larch, cedar and fir. Hemlock, spruce and white pine, of course, form the principal raw material for sulphite or groundwood pulp. The spruce in the Kootenay valley runs about 10 to 20 per cent. of the total and for this reason only easy bleaching, bleached or news sulphite pulp was considered.

The report of Mr. Helin stated that there were ample supplies of raw material available to meet the requirements of a 100-ton sulphite, a 150-ton sulphate mill or a 200-ton groundwood or newsprint mill.

Considering also that transportation of supplies from the Arrow Lakes would be a simple matter, Nelson appears to be as well situated as any town in western Canada for the purpose.

An important point in connection with the transportation of the raw material is that logs from the Kootenay lake district would be rafted and towed to the mill at very low cost. The danger of losing logs through storms would be negligible, for the waters are all well sheltered by the mountains. Logs could be brought to the water from the hills economically by means of flumes.

With the existing railroad service, sulphur or salt cake could be brought to Nelson cheaper than to the coast, for all these supplies come by rail and the West Kootenay is nearer than the coast to the source of supply.

As far as markets are concerned the West Kootenay would have an undoubted advantage, for several hundred miles would be saved in reaching the middle western states, while for export overseas the freight rates would be very little higher than at the coast. Sulphate of sodium and lime necessary in manufacturing kraft or sulphate pulp, the sulphur, pyrites and lime or limerock would be more easily obtained in the interior than on the coast for the sulphur used in coast mills is brought in by rail from the Gulf of Mexico. Limerock of exceptionally good quality is obtainable on the Kootenay lake.

Coal, the most suitable fuel for the purpose, could be obtained at satisfactory figures in the interior.

Twelve hundred horsepower, sufficient to operate a 100-ton sulphite mill, could be obtained at the present moment from the Nelson City plant, while the 5,000 additional horsepower necessary for a groundwood mill could be made available by installing two more units of 2,500 K.W. each.

Within a mile of Nelson itself there are several sites which are considered suitable for a mill and in this respect there would be the advantage that it would not be necessary to tie up large amounts of capital in houses and buildings for employees.

Summing up the conditions existing at Nelson, Mr. Helin states:

"With regard to raw materials, chemicals, cost of power and fuel and labor conditions, Nelson can offer better conditions than now exist at most pulp plants in western Canada.

"Excellent mill sites can be found near Nelson for a sulphite pulp and paper manufacturing plant.

"Market conditions are in favor of Nelson for any kind of pulp, with the exception of groundwood, which can be put on the market for less cost from a plant located on tidewater. For a paper mill there is, in addition to the export market, a good home market within easy reach of the West Kootenay.

"Every favorable local condition can be utilized by erecting a sulphite pulp mill or newsprint paper mill, but as the market conditions are most favorable for paper I recommend the installation of a paper mill."

In concluding his report Mr. Helin quotes Mr. L. Jacobsen, engineer of Minneapolis, who estimates that a 75-ton newsprint mill could be built at Nelson for $975,000 and a 75-ton groundwood mill for $375,000. This, he estimates, would require a total capital of about $1,500,000 for a 75-ton paper mill, including working capital, or about $2,000,000 if a 30-year supply of timber were to be secured for the plant.

AS CLEAR AS MUD.

A man had just informed the Ticket Agent that he wanted a Pullman berth.

"Upper or lower" asked the agent.

"What's the difference?" asked the man.

"A difference of fifty cents in this case," replied the agent. "The lower is higher than the upper. The higher price is for the lower. If you want it lower you'll have to go higher. We sell the upper lower than the higher. In other words ,the higher the lower. Most people don't like the upper, although it is lower ,on account o fits being higher. When you occupy an upper you have to get up to go to bed and get down when you get up. You can have the lower if you pay higher. The upper is lower than the lower because it is higher. If you are willing to go higher, it will be lower." But the poor man had fainted.

The moral is, let the Secretary make arrangements for you. The technical section trip proved his ability in this line.

Courage strengthens. Fear weakens. Courage wins. Fear loses.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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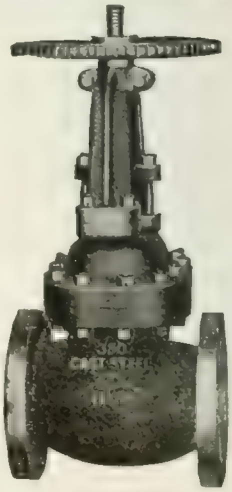

EDITORIAL

HEAVY TIMBER IN LABRADOR (?)

The editor has received an invitation to subscribe to an offering of $300,000 8% One Year Secured Notes, redeemable at par and interest. The security is stated to be an absolute assignment of a 99 year renewable crown lease of a timber and pulpwood area of 2,000 square miles. The invitation states that this property is situated in the most densely wooded part of Newfoundland—on the Hamilton River, and is not subject to local legislation on regards to future taxes, stumpage, restrictions etc., and that the annual carrying charge is definitely fixed at only $4,000 per year. The purpose of the issue is, ostensibly, "to pay off in full, certain charges, interests, etc.," pertaining to sale of this property to British interests. In the event of default of payment of the notes it is stated that the trustees will have reserved an amount, the interest of which will be sufficient to pay the rental on property so that the security is equivalent to a first mortgage, and a default would make the note holders, through the appointed trustee, owner of the property.

We note a statement to the effect that all the titles, etc., pertaining to this issue have been examined and passed by a firm in Montreal, one member of which has the same surname as a joint trustee of the fund and we note that the other trustee is the present lessee of the property.

The notice of the offering is perfectly plain but, in support of the contention that the timber and pulpwood lands which form the security are worth *millions of dollars*, the notice is accompanied by a "report on 2,000 square miles of Hamilton River property, situated in Newfoundland." We shall mention a few of the high spots in this report.

It is a copy of a report prepared for the Government of Newfoundland by a gentleman whose titles are represented by the initials J. P., D.S.I.C. and the report is dated *December*, 1912. Reference is made to a map showing the Grand River with its numerous tributaries and branches which drain the property and furnish the finest logging facilities.

The principal growth is estimated at 80% Spruce, 10% Fir, and the balance Juniper and Aspen.

The next two paragraphs we quote verbatim.

"The bulk of the timber follows the water ways where the stand is very large, averaging ten cords and upwards to the acre. Saw logs above the 10 inch measure will cut 4000 feet to the acre. The timber is exceptionally sound, straight, clean and free from under brush, having a diameter of from 10 inches to (2¼) (2½) feet and commonly reaching a height of from 50 to 75 feet. Three 16 feet logs from a single tree are in abundance.

About 25 per cent will make deals 10 to 12 inches in width and 40 per cent will make deals 7 to 9 inches in width and the balance may be sawn into scantling or cut into street paving blocks; slabs from the largest timber may be cut into lath; and exported to the American market, the Timber is strictly virgin and grows well up the hillside and can be easily drawn to the River. On some of the smaller rivers, I came across acres that will cut from 10,000 feet B.M. to the acre. The average diameter of Spruce trees 10 inches and up on the whole property is 16 to 17 inches."

The report states that at Grand Falls is a water power capable of developing 1,200,000 H.P. with the flow estimated at 50,000 cu. ft. per second. The time when measured is not mentioned. In addition there are several falls which might develop 15,000 H.P.

Mention is made of many sites suitable for the location of a mill and that the river is suitable for the delivery and storage of logs and that there is sufficient flow of water to drive *at any time* during the year. (Italics are ours). The shipping facilities of the Grand River are described as good.

A rather astonishing paragraph is that which says that the thermometer rarely registers 20 below zero, that logging is possible from October until the end of April, and that at no place will the log haul be greater than two miles. In this paragraph, we note for the first time the word *Labrador*, where it is incidently mentioned that the southern point of Labrador is in the same latitude as London, that summers are fine and warm, when the temperature averages about 80 degrees F.

The report states that any quantity of skilled labor may be obtained in Newfoundland from the axeman to the millman, and adds that hundreds go every spring to work for the steel and coal companies, at Sydney, C.B.

The following tables are so important and at the same time, to our mind, so ridiculous, as having any present value, that they are given in full.

Timber Limits.

The limits contain free and clear of waterways 2,000 square miles or 1,280,000 acres. Placing the pulpwood at 10 cords to the acre, a most conservative estimate, the limits would cut:

Saw Logs above the 10 inch Measure:	
Spruce	4,096,000,000 feet
Fir	512,000,000 "
Birch, Juniper and Aspen. . . .	512,000,000 "
Total quantity Feet B.M.	5,120,000,000 "
Pulpwood above the 4 inch measure	12,800,000 Cords

Cost of Lumber C. I. F. New York.

Cost of cutting, driving, repair to river per 1000 feet	$4.00
Sawing and piling	2.00
Loading from mills	.50
Royalty or Stumping to Newfoundland Government	.25
Freight, covering insurance	3.20
Duty in the United States Ports (Payne-Aldrich tariff)	1.00
Total C. I. F., New York	$10.95

(If delivered in English Ports, the cost would be $11.75).

Cost Ground Wood Pulp Per Ton C. I. F. New York.

Cost of cutting, driving, etc., at $2.40 per cord, allowing 1¼ cords of wood to one ton of pulp	$3.00
Rossing and grinding	3.50
Labour, including depreciation on machinery	1.23
Freight, covering insurance	2.20
Duty to United States Ports	1.67
Cost C. I. F. United States Ports per ton	$11.60

(If delivered in English Ports the cost would be $10.23).

Comparative Advantages.

	Canada	Newfoundland
Government Licenses	21 years	99 years with right to renew
Government Annual Rents	$7.00 per square mile	$2.00 per square mile
Government Duty	60c per cord pulp wood	Nothing
Restriction to cut Logs	Nothing under eight inches	No such restrictions
Estimated time for reforestation	40 years	40 years
Labour per month	$41.50	$18 to $25
Shipping	6 to 7 months per year.	6 to 7 months per year.

I value the timber as standing timber $3.00 per 1000 feet B. M."

Comment.

The above is an abstract of the report of a man who had been for two years in the Engineering Department and twenty years in the Department of Agriculture and Mines for the Colony of Newfoundland, with seven years experience surveying timber lands on the Labrador.

It is difficult to comment with proper restraint on a report of this kind and on the action of a financial agent in issuing it, nine years late, as a basis for collecting money on the security of the property supposed to be therein described. The first evidence of unreliability is the apparently studied care that has been taken to avoid the use of the word "Labrador". It is nowhere definitely stated that the property referred to is in Labrador. This being so, the comparison of the latitude of Hamilton Inlet with London is childish unless, perchance, the writer assumes that the men who read the report will have forgotten the interesting account in their geography of the warming influence of the Gulf Stream on the climate of England and the chilling effect of the Labrador Current on Newfoundland and Labrador. This region happens to come under the Government of the Island Colony although its geographic and climatic conditions are not exactly identical. Furthermore, to compare shipping facilities of Hamilton Inlet with St. Lawrence or other Canadian ports and give them both the same span of activity is incorrect. Ice has been found to give trouble in Labrador rivers in July. How is it possible, then, to ship goods for 7 months and drive logs the year round?

The statement with regard to timber supply appears to have been made with the optimistic abandon and disregard for accuracy which seems to have been typical of a number of reports made a decade or so ago. An acre which will cut 10,000 feet board measure will furnish approximately twenty cords and any considerable area which will furnish 10 cords to the acre is not to be found east of the Rocky Mountains. To say that an average diameter of Spruce among the larger trees is 16'' or more, is very likely overstating the best growth on any pulpwood lands now operated by Canadian pulp and paper companies.

Perhaps it is a foolish waste of time, paper, and ink, for us to study and comment on such matters as this but the Pulp and Paper Magazine would not be doing the right thing to permit such a matter to pass unnoticed.

The figures given for groundwood pulp for instance, were low, probably 50% low, even for 1912, as respects the major items in the table.

The cost of cutting, driving, etc., is placed at $2.40 a cord. Apparently this costs a company absolutely nothing except the wages (without board) of the men. Labor is given at $18 to $25 per month. Nothing seems to have been added however, for the cost of supplies, food and shelter, certainly a man is not going to pay his board out of $18 a month. There are several other items in this table which will no doubt surprise Canadian manufacturers and may eventually start a stampede for Labrador. It may be that this table along with the other parts of the report refer to conditions more than nine years ago.

Perhaps we should not be cynical, but to be perfectly frank, we believe it unethical to mislead by giving incomplete information. No mention is made whatever of the possibility of changes in circumstances both as to labor costs, manufacturing costs, timber values, damage by insects, fire and storm, or changes in markets. There are a number of apparent exaggerations in the report that we have not definitely mentioned. We do not want to discourage legitimate exploitation, on any property or possibility, but this thing looks to us a bit fishy. It would mean that the bond holders are buying rights to what may now be a vast wilderness for all anybody knows from the information given.

We know definitely that some of the statements in this report cannot be substantiated at the present time, even if they were correct nine years ago. It is high time that offerings of such securities were based on accurate reports by disinterested parties and sufficiently recent to be of some slight value in making estimates.

SECOND INTERNATIONAL NUMBER

The second annual International number of the Pulp and Paper Magazine is now in preparation. Copies will be sent to regular subscribers who send in their requests before Oct. 21. After that date and to non subscribers, the price will be $1.00.

Impressions of a Canadian Tour

By PAUL JOUANNEAU, Papeteries de Vendôme,
Loiret Cher, France.

First of all I consider it my duty to state that I was delighted with the reception which I was accorded by the Canadian paper industry. I was allowed free access to all the mills and was able to obtain all the information which I desired from the mills which I visited, without being subjects to such restrictions as are imposed on visitors in certain European mills. Unfortunately I must admit that Canadian mills are easier of access than certain French paper mills, which is one of the reasons which induced me to continue my study of paper making abroad rather than in my own country. I was greatly surprised to see the co-operation which exists between most of the large Canadian mills. These mills keep continually in touch with one another, exchanging new discoveries as well as improvements effected in the equipment, even going so far as to exchange costs. By means of frequent technical meetings, their technical men have a chance to discuss all sorts of problems which make for a reduction in costs, increase in output, and improvements in the quality of the paper. Owing to this close co-operation, of which the Canadian Pulp and Paper Association is the moving spirit, the Canadian paper industry has grown in a hitherto unheard-of manner, developing its equipment to the utmost, and succeeding in making a very good grade of paper at stupendous speeds and relatively low costs. It is very regrettable that in France we lack this spirit of *technical* association, without which an industry cannot develop to the best advantage. We have merely a few small commercial associations, known as "syndicates", the main function of which is to keep prices uniform, but which exert no influence on the industrial processes themselves.

I naturally wished to start my duties in this country with the foundation of the paper industry, namely, the manufacture of chemical and mechanical pulps. For this reason, and also to begin my investigations at one end of the country, I went to Chandler, Que., (St. Lawrence Pulp and Lumber Co.) where, for a month and a half, I was able to study the manufacture of sulphite as it is carried out in most Canadian mills. I saw there that the cooking of the pulp is no longer left to the mere skill of the cook, but that it is being conducted more and more by strictly scientific methods, such as laboratory tests and analyses of the pulps. I have even come across another piece of equipment *, after I had left Chandler, which eliminates all intervention by the cook during the cooking process. This is controlled automatically from start to finish, so that when the cook reaches the end of the standard curve he merely has to blow his digester. In France wood is so scarce that chemical pulp mills are few and far between. As I never had the chance to study this aspect of the industry in my home country, I am not in position to compare the methods we use with those in use in the Canadian mills; but I am under the impression they are about the same.

As to mechanical pulp, I visited the magnificent mill of the Chicoutimi Pulp Co. The quality of the pulp turned out appeared to me to be higher than that of the groundwood which we import from Scandinavia; it is white, strong, and exceptionally clean. I was informed as to the "Hall process", and I am of the opinion that the manufacturers who wish to reduce the proportion of sulphite in news print would be well advised to look more closely into this process. I was also much interested in the new grinders built by the Chicoutimi Pulp Co. It is easy to see that down to the smallest details they are the result of a long experience in the manufacture of groundwood. One point that surprised me somewhat is the fact that second grade pulps are not refined in most of the mills which I visited. But as this grade of pulp can doubtless be put to some other use, I understand quite readily that it is useless to waste power in refining it. The few mills which do refine it use conical, knife refiners, while in France kollergangs are mostly used, and I think the latter are better as they are easier on the fibers. I have not much to say about magazine grinders, which I saw in operation in France some years ago. They are gluttons for work, and have a phenomenal output; but the quality of the product necessarily suffers, for it stands to reason that the grinderman cannot give such a monster the same attention that he can give to a smaller stone.

Let us now come to paper making itself. When I first entered the machine room of a large Canadian paper mill I was rather bewildered at the prodigious speed with which the paper was wound off at the end of the machine. The greatest speeds which I had seen in France were left far behind. My first thought was: "Canadians *turn out* paper, they are not *paper makers.*" My idea of the paper maker was the workman of olden days, who handled and nursed his stock in the beaters, watching over it continually, even when it was on the paper machine. In a word, I thought that paper made at such speeds could be of but indifferent quality. I was therefore all the more surprised to find out that the paper that was being reeled so fast was, to say the least, equal to European news print. Whether it be made in France or in Canada, news print is never a thing of beauty; but you Canadians have the advantage of producing enormous quantities of it on a single machine. This first mill which I saw was that of Price Brothers and Co., at Kenogami. I there admired the five splendid Walmsley machines, each of them the exact counterpart of its neighbor and running at 700 feet a minute, a speed which is as yet unknown on the other side of the Atlantic. But this speed has been considerably bettered, and it is far behind the speed of 1,000 feet a minute which has been attained by some more recent machines. Here I must say I experienced a slight disappointment, both in Canada and the United States, for, when I saw them, the famous machines which had run or were to run at 1,000 feet a minute, were only running at 800 feet. This was due to various reasons, such as lack of sufficient orders, the machines had not been properly tuned up, excessive power consumption, etc. I think that these high speed machines have not yet been sufficiently perfected, that they have caused a certain amount of disappointment, and that the very wide machines which turn out the same amount of paper per 24 hours have given less trouble and are giving entire satisfaction. But, nevertheless, I would have liked to see with my own eyes a machine running at this phenomenal speed of 1000 feet a minute, before leaving the New World. (Running at 1000′ regularly. —Ed.)

---

* Allen automatic control for pulp digesters.

With regard to the paper machines, I must admit I was rather taken aback by the formidable slope given to the Fourdrinier wire. But evidently the stock must be given a speed in proportion to that of the wire, I have learned since then, however, that machine builders are beginning to do away with this slope in new machines. At the present time, a back slope (about 2 inches between the breast and couch rolls) seems to be preferred, and the required speed of the stock is obtained by increasing the head of stock behind the slice, which may be as high as about 50 inches. The merits of this system are easy to see. The chief one is the ease with which the machine tender can regulate his sheet to suit the speed of his machine by increasing or decreasing the head of the stock back of the slice. I saw one such machine (Bagley and Sewall) at the Ontario Paper Co.'s mill at Thorold. In France there are several machines equipped with suspended Fourdriniers, allowing of a quick regulation of the slope of the table according to the paper which is to be turned out.

The enquiry which I conducted in connection with the use of suction rolls gave me a very favorable impression of these rolls. They are in use in a few French mills; but the use of a suction roll for the bottom roll of the first press was entirely new to me. I am convinced that this arrangement presents great advantages, the chief of which is certainly a reduction in the number of breaks, which occur most often at the couch roll and at the first press. These rolls also effect a considerable reduction in the cost of clothing, which largely offsets the increased power consumption. All mills will certainly be equipped with these rolls in the near future, with the possible exception of those mills which make colored papers exclusively.

Rubber washing rolls on the jackets are much used in France instead of the wooden doctors. I was somewhat surprised at not finding any of these rolls, which seem to be completely unknown to Canadian and American paper makers. I think they possess certain advantages over wooden doctors which were tried out in our mills but did not give satisfactory results.

I had always been puzzled to know where the Canadian mills could find the acrobats required to handle the paper on their high speed machines. The problem has been solved by the use of automatic paper carriers: this improvement was entirely new to me, and I had the pleasure of admiring with what perfection it does the work for which it was designed.

I was greatly interested in the fascinating problem of electric drives for paper machines. In my opinion the sectional drive, such as the ones which I saw at the Laurentide Co., the Ontario Paper Co., the Interlake Tissue Mills Co., and several mills in the United States, is certainly the drive of the future, especially for high speed machines. It is evident that in spite of the high initial cost it soon pays for itself by the reduction in the power consumption, in lubrication, in cost of upkeep, in belting, etc. At the present time there are three competing systems, the Harland drive, the Westinghouse drive, and the General Electric drive. I have studied two of them very carefully, and it is extremely difficult to decide in favor of one rather than the other. It is only through extensive experience that judgment will be passed on these new inventions; but it is certain that both these systems, which are entirely different from each other, are quite curious. The starting point of these electric drives is what is known in France as the "Léonard group", which we use extensively for driving paper machines from one large motor.

The Bird screens and the Nash vacuum pumps also attracted my attention. I consider them perfect, in spite of their high cost.

The pulp preparation department was a revelation. Where are the beaters, the pulpers, the kollergangs? All this is done away with! Chests, huge chests, containing the pulp from the digesters or from the grinders, and a cabin, similar to a railway switchman's cabin, replace all the apparatus formerly used. A single man who manipulates a few levers does the work formerly done by twenty men. These levers operate, either pneumatically or hydraulically, various valves which control the flow of the pulps into the mixing chests. Pumps then send the mixed pulps to the paper machines. How wonderfully simple! Certain mills have even done away with the Jordans. Of course, controllers and regulators are required in various places, but everything is automatic, and nothing is touched by hand. The Belgian Industrial Co., at Shawinigan Falls, has recently installed a first class equipment of this kind. A few French mills are beginning to adopt this system; but naturally it can only be the ones which make their own chemical and mechanical pulps, so that they cannot be numerous.

At the Belgian Industrial Co. I had a chance to get a close insight into, and to admire the wonderful organisation of the statistics departments of the large Canadian mills. The records, reports, and archives are drawn up and kept in such a simple manner that a single glance will show the operations of any department or of the whole mill. Comparisons can be drawn for several successive years, inventories can be drawn up, or expenses determined, etc., in a very short time without having to go through endless registers.

The innumerable pieces of control apparatus and of automatic recorders to be found everywhere and for every purpose, even to the break recorders on the paper machines, also excited my curiosity. I shall not dwell on all the practical devices which I saw for the handling of paper and other materials: conveyors of all descriptions, electric trucks, cranes, compressed air hoists, weighing machines, etc., everything was designed for a special purpose and fulfilled the function for which it was meant, effecting appreciable savings in the cost of labor. There are some cases, however, where this has perhaps been pushed a little too far; and, in an attempt to cut down the cost of labor, the upkeep was increased to such a point that it exceeded the former cost of labor. Moderation is good in all things, even in the use of automatic devices.

A great factor in the large production of Canadian news print is the standardisation of this grade of paper. All the mills turn out paper of the same weight, color, width, and composition, or nearly so. Less color to buy and to handle, no troublesome changes in size and speed to be made, simple devices for the automatic regulation of the stock consistency and of the drying, simplification of the work of the machine tenders in controlling the quality of the paper, such are a few of the numerous advantages of this method of working. Moreover the machines are easily classified into two, two and a half, and three roll machines, which greatly simplifies the choice of machines and also the work of the machine builder who can manufacture parts on a larger scale. When shall we in France standardise our news print? Of course it is impossible to change the size of all the paper machines all at once, but the standardisation of weight and color alone would be a great help. At the present time each one of our newspapers has its own size, weight, and color, a fact which is not conducive to large output. It is to be hoped that some day our publishers will follow the lead of their colleagues on this side of the Atlantic, thereby relieving the French news print manufacturers of many of their troubles and making for a more uniform, and consequently better, paper.

The belief is quite current in France that Canada has devoted the whole of its energy to the production of news print and has neglected the finer grades of paper. I have seen for myself that we are mistaken in this respect, and that Canada produces fine papers of very high quality. I had occasion to visit the two mills of the Rolland Paper Co., at St. Jérôme and at Ste. Adèle, and I there admired the qualities of the Linen Bond turned out at these mills, which will stand favorable comparison with any pure rag paper turned out by the oldest French paper mills.

In closing I must mention how interesting I found the kraft mills which I had a chance to visit. This kind of pulp is almost unknown in France, always for the reason that France is not a wood producing country. It was during my visit at the mill of the Wausau Sulphate Fiber Co., Mosinee, Wis., that I realised the advantages of this process and the superiority of the paper made in this manner as a wrapping paper.

Of course esparto pulp is unknown in Canada; and it is one of the advantages which France possesses to be able to utilize this material in the manufacture of the better grades of print paper. It is undeniable that print papers made from wood pulp are not comparable with those made from esparto.

In the United States I was fortunate enough to visit many Wisconsin mills, each of which presented some new features of interest. I am finishing my tour by going through the mills in the neighborhood of Watertown, whence I shall go to the Holyoke district. One could doubtless spend his whole life visiting paper mills, and in each one there would be some new and interesting feature to observe. But the best of things must come to an end. In a few days I shall sail for France, perfectly satisfied with the mass of data which I have collected, my head crammed with new and practical ideas, and taking with me the very best impression of the warm welcome which I found everywhere in Canada and the United States.

At the dance held at Iroquois Falls during the visit of the Directors last month, says the Broke Hustler, "one of the features of the dance was the presence of Mrs. Anson the mother of the President. The young people took it as a great compliment that the lady of four score had sufficient interest to go, and smile her pleasure as the youngsters of a mere score of years circled past her. Many were the eyes turned towards her with real respect and affection showing plainly the pleasure it gave the dancers to have her with them."

Golf has taken hold of the folks at the Abitibi mill and a tournament is in progress.

Why Cost Keeping is Necessary

Extract from articles appearing in the "American Magazine", by Edward N. Hurley, late Chairman of the Federal Trade Commission, prepared for the Cost Association of the Paper Industry by J. T. Burke, Secretary.

Do you know that out of 250,000 business corporations that reported to the Federal Trade Commission, 100,000 showed no net income at all? Only 60,000 earned over $5,000 a year, and 90,000 earned less than $5,000 a year. These figures are founded on the reports of the owners of the businesses themselves and mean that nineteen out of every twenty-five corporations in business either earn nothing at all, or earn only the fair sized salary of one good man.

One half of all the people in business in this country today do not know whether they are making money or not. They may think they know. They may tell you they are making money, or they may tell you they are falling behind. But in either case they will be only guessing. They cannot know accurately, for they have no cost books and thus no way of determining costs. They frankly work by rule of thumb.

Forty per cent of business men go a little further and have some rough way of estimating costs. They are just as apt to be wrong as right, and are perhaps worse off than the first group because a bad system is worse than none at all. The remaining ten per cent actually know what it costs them to do business.

Most manufacturers do have bookkeeping systems; but many of them simply keep the actual cost of material and labor used; they seldom account for materials wasted or lost in the process of manufacture, or for bad debts. The expenses over and above labor and materials are known as "overhead" and are highly important. This "overhead" expense often equals the cost of labor and material.

Business men sometimes make a careful study of what an article costs during a certain period, and, then taking the resulting figures as a standard, use them for years without checking up. I know one firm that thought it cost a dollar a day, over and above wages, to send out a mechanic and helper on jobbing work. For a long time, they made that charge. An accountant, analyzing the costs, discovered that these two men, **exclusive** of wages or any profit, actually cost in overhead expenses an average of $2.16 a day!

A manufacturer of shirts established by test a cost, and used the same figure for nearly two years. When he checked up by an inventory he found he had lost $20,000 because the standard cost had not taken into account waste of materials. A firm doing a business of around $100,000 a year kept only the cost of labor and materials. They put in a new system which disclosed that twenty-five per cent of their business had been done at a loss, that another twenty-five per cent, purely by luck, was done at a profit sufficient to cover that loss, and that their net profit, came out of the remaining $50,000 worth of business. A business of half the size, well managed, would have been more profitable.

No man has a right to be in business **unless he knows his costs.** Installing a system, or keeping up the books, is not an expense. It is insurance money. The price of an adequate cost system is paid over and over again every month.

No man has a right to ask for credit unless he knows what he his doing: and he cannot know this unless he not only knows costs, but is able to relate them to income. Before attempting to get expenses in shape it is necessary to find out not only what your expense **are**, but also what they **should be.**

There is always the question whether the dollar one is asked to spend should be spent whether it will give a return or whether it is waste. It is not the great sums that matter, one catches these at once. It is the little sums that are paid out in the course of the day's work that frequently spell the difference between profit and loss, between success and failure. The larger the business, the larger the opportunities for waste, although the **proportion** is not as large in big as in little business.

This is the method that we finally worked out and which I think will apply equally well to any kind of business, irrespective of size. It may also be applied to one's private affairs:

First, we took the year's business and planned what the next year's business ought to be; that is, set a definite task. The figure was not the highest possible, but a good conservative estimate, made up by going over each territory and finding the amount that could reasonably be sold. Anyone can arrive at a similar figure in his own affairs; the corner store can work out from the books how much has been sold in the past, and can then calculate a quota for the next twelve months. The amount to be fixed should not be limited only by hope; it should be limited by experience, and then regarded as a minimum and not a maximum.

That figure represents the gross income. We then deducted from that the profit that we calculated to make. That profit will depend upon the nature and risks of the business. It is practically impossible for other than very large concerns selling enormous amounts of goods to work on less than fifteen per cent profit on gross sales; the ordinary man will have to allow at least twenty per cent. (Remember, I am speaking of sales — not invested capital). First calculating the profit seems to be putting the cart before the horse, but unless this profit is first reckoned, so that a minimum figure of expense is had, one cannot know whether the spending is from what was calculated as expense or from what was going to be the profit margin.

Say the profit is to be twenty per cent and the whole sum of the business is to be $100,000. Then we know that we cannot spend more than $80,000 without cutting into the planned profit.

Next, we go back over our expenses and find out how much we were spending in the past and, separating all the expenses, get the absolute limits that must not be crossed if we are to carry out our plans. We shall have to pare down a lot of items in order to get within the limit. We shall begin to find out what we can afford, and the experience is very illuminating. If expenses have not been closely watched, no end of uselessly spent money will be uncovered. Any man going back over his last year's accounts can pick out items which are not supported by reason. The discovery may be made (and probably will be) that the business cannot be run on the arbitrary basis of profit. That will be the first impression. A further study may develop that furthur cuts must be made. or that a larger volume of business will have to be done in order to keep within the expense minimum. Or, again, a lower profit may have to be fixed. But do not imagine that you can do business on five or ten per cent. The big-volume, small-profit way of doing business allows no margin for doing **less** than the calculated volume. The thing is to plan what you **can** do, and not what you **might** do.

We know that if we do the full amount of business, and do not spend beyond the figures that we have set, we will make the full profit.

We have limit figures of what we can spend in each division of the business and how much we must take in to justify the amount. We know that if we spend what we calculate, but do only seventy-five per cent of the planned business, we are neither losing nor making money. We can thus give to ourselves a "passingmark" of 75; if we do ninety per cent of the amount of business estimated as reasonable, we know that we are doing fairly well, while if we score one hundred per cent we have done all that we started out to do. Because one cannot to make perfect scores all the while is the reason that it is dangerous to try to do business on too narrow a margin of profit.

On the other hand, if we exceed our expense budgets in one item, unless we can cover that overdraft in another item we know that we are cutting into profit. If we keep up the expenses, and do only fifty per cent of the business, we know that we are running at a loss, and can take immediate steps to boost the business, or to close it out. Every business now and again will run at a loss; but the proprietor ought to know his losses as they occur, and decide how long his surplus will permit the loss to continue. If it appears that the losses are due to temporary conditions, then the business lives "on its hump" until that condition changes; but if the condition is not temporary, then the serious matter of winding up must be considered. There is no point in staying in business at a continued loss.

WASTE PAPER STOCK SCARCE.

Increased demand and an upward trend in prices have marked the wrapping paper and board market the past week according to reports reaching the Canadian Pulp & Paper Association. The market for these commodities which has been more or less stationary for some months has become suddenly active. Paper stock from which boards are made and which was recently selling at so low a price that collectors refused to make their customary collections is now quoted at from $16 to $18 a ton and in brisk demand, both locally and for export. Canadian collectors are shipping part of their accumulations to the States and profiting by the increased price and the exchange premium. This is making a shortage of paper waste in Canada and indicates a higher price for boards. The improved tone in the market for these grades of paper is said to reflect the general tendency.

WILLIAM WHYTE WITH WALMSLEYS.

William (Billy) White has been appointed Canadian Representative for "Walmsleys" of England builders of Paper Machines, Steam Engines, Roll Grinders, Super Calenders, Stone Press Rolls, etc. He is leaving for England, Norway and Sweden this week in connection with the export business of "Ayers Felts" and "Niagara" Wires.

Think of good, useful and beautiful things, thereby toning up your mind to a high level, and improve every opportunity to uplift yourself.

The Structure of Cereal Straws

By FRANCIS E. LLOYD, F.R.S.C. McGill University.

(Continued from last issue)

Internal Structure of the Leaf Sheath.

The leaf is composed of elements which are quite similar to those above described for the stem, but arranged somewhat differently, due to the fact that the leaf is a flattened organ, the upper surface (which lies against the stem) being smooth, and the lower ribbed. In a transverse section it is seen to be (figure 25) segmented into similar areas of loose parenchyma which behaves quite as does the pith in the stem, breaking down early to leave cavities. Each partition is composed of a vascular bundle, having bundle of fibers (mechanical tissue) between it and the lower (outer) epidermis, and a group or bundle of larger, much elongated and fiber-like cells between it and the upper (inner) epidermis. The parenchyma which fills the ribs just below the lower (outer) epidermis is composed of smaller, chlorophyll bearing cells, through which a small bundle and a group of fibers run, parallel to the larger bundles just noticed. The amount of fibrous material is not inconsiderable, forming approximately one-fourth to one-third of the total amount of fiber of an equal length of stem. A peculiar anatomical feature of the leaf-sheath is the occurence of a very long, thin walled tubular cells, (**1**, figure 25), forming a small group of fibers between the large bundles and the upper (inner) epidermis. They can hardly be classed as fibers—or at any rate they cannot be compared with fibers in point of strength, since the walls are thin and the lumen large, measuring 60 microns, more or less. The end walls are transverse, slightly oblique, or forked. They are relatively few in number, but can usually be found in pulp or straw paper.

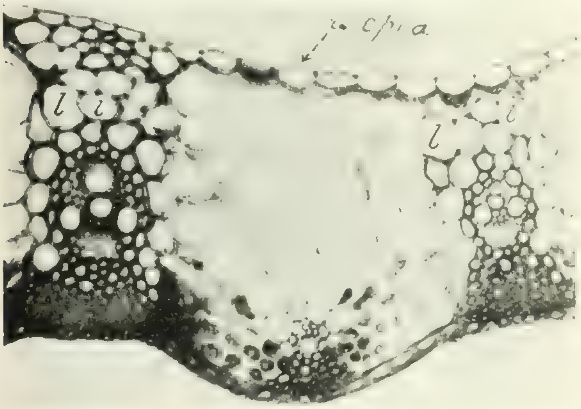

Figure 25.—Portion of a transverse section of the leaf sheath of wheat. Note the wide (1, 1) thin walled cells just above the bundles. **u. epid.**, upper (inner) epidermis. x 130.

False Nodes.—The above described structure fails almost entirely at the base of the leaf-sheath, where the motile organ or false node occurs. There is an entire absence of specialized chlorenchyma, and the parenchyma is thick walled. The walls, however, in common with those of the bundles of fibers, which form a very conspicuous feature in a transverse section (figure 26) are soft and yielding during the growing period. The bundles in question accompany the fibro-vascular bundles, and the component cells are fiber-like, with highly elastic walls, seen as darker groups of cells in figure 26.

Chemical Characters of the Tissues.

When the cell-walls are first formed, they are composed of cellulose, with a layer (the primary membrane) of pectose between the adjacent walls. As development proceeds, additional substances (lignin-bodies) the chief of which passes under the term lignin are added to the walls.

Stem.—In the mature straw, all the cell-walls become strongly lignified with the exception only of the phloem, the thin-walled xylem (wood) lying on either side of the primary wood, the collapsed pith cells, and the chlorenchyma. The lignified tissues therefore are the epidermis,[7] all the fibers, all the wood vessels, (tracheids) and the parenchyma (save the inner pith cells and chlorenchyma) (figure 4). On account of the completeness of lignification the cellulose of straws (grain straws) are regarded chemically as lignocelluloses.

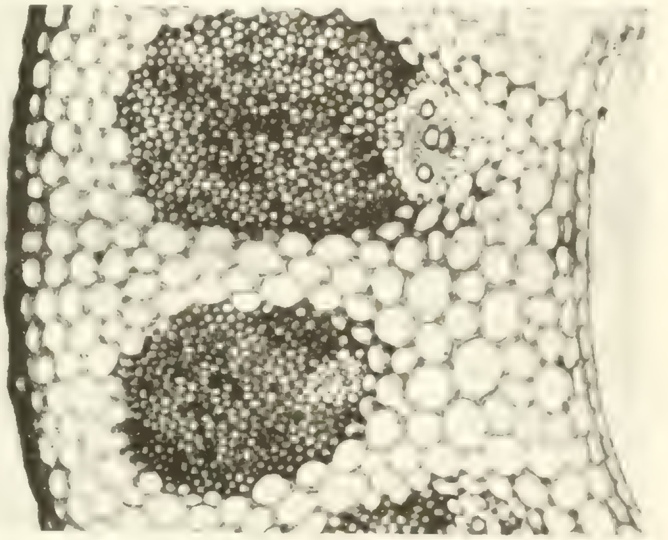

Figure 26. Sector of a transverse section of a false node (leaf base) of wheat. x 105.

Leaf Sheath.—In the basal region the fibers between the bundles and the lower epidermis are wholly lignified. Of the long cells (**1,1**, figure 25) some, but not all, are lignified, those namely which lie near the middle vertical plane of the bundle. The true fibers occur, as they do next the upper epidermis in the left hand (the larger) bundle in figures 25, these are lignified. The lower (outer) epidermis is weakly lignified only, the inner not at all. The fiber and xylem (except the soft xylem) are also lignified. The parenchyma is not.

In the upper part of the leaf sheath only the fibers between the bundles and the outer epidermis, are lignified, as also the fibers and xylem vessels of the bundles. The thin papery leaf margin is unlignified for some distance from the edge, probably as a result of early dessiccation.

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[7] The lignin reaction proceeds very slowly in the outermost fibers and in the epidermal cells. This seems to be due to other substances possibly of the same nature as that which renders the cuticle waxy. A light yellow color is noticeable in these tissues.

In the false node there is no lignification at all, excepting only the xylem (wood) vessels.

The epidermis is clothed by a very delicate membrane which extends over the whole surface of the plant, the **cuticle.** This membrane is impregnated with a wax-like substance which renders it very hard and resistant, and gives it a highly glossy finish characteristic of straw. It repels even hot water after considerable boiling. There is some evidence also that the inner cells of the parenchyma and the associated cells are more or less impregnated with wax-like materials, since their primary walls are very resistant to concentrated sulphuric acid even after twenty-four hours treatment. This may be due simply to a high degree of lignification however.

There is furthermore a considerable degree of silicification of both cuticle and more of less of the tissue beneath. The presence of silica gives to the straw a corresponding degree of hardness and smooth finish. The amount of silica is sufficient in many cases to preserve the form of the cells even after the complete extraction of the cellulose and other materials by suitable reagents. An analysis of four samples of straw for silica gave the following percentages of the total dry matter.

Barley	2.07	Rye	2.18
	1.78		2.14
Oats	3.46	Wheat	2.30
	3.46		2.44

It is the amount of silica in the superficial tissues which renders the surface so very hard and resistant. It is well known that the same result is seen in the surface tissues especially of bamboo, rattan, and the like.[8]

Zacaton (Elicampes macroura) according to Brand and Murrill (1915) contains silica to the amount of 6.5 to 7.5 on the total straw. This is "very high."

In the preparation of paper pulp the pectose is altered, setting the cells free from each other, and the cells are more or less delignified. The delignification is carried on much further in bleached pulp than in the unbleached pulps. Papers subjected in manufacture to a 20 per cent and to a 15 per cent lime cook, and a "Kraft" paper all showed pronounced lignin reactions with the Klason and with the Cross and Bevan methods, while bleached papers from wheat straw subjected to a 6 and a 10 hour soda cook, and from oat, gave only very slight lignin reactions. An unbleached oat gave a distinctly stronger lignin reaction.

[8] The following figures are afforded by C. Wehmer (1911):

	Total ash	of which silica constitutes
Barley	5-7 %	50-60 parts
Oat	. . . . . .	50-66 "
Rye	5-10	60-70 "
Wheat	3-5	50-60 "

These figures are much higher than the previous given, but of course no adequate comparison may be instituted without due regard to place effect and other possible conditions.

(To be continued.)

The Iroquois Falls Baseball Club has won the Hamilton B. Mills cup twice in succession in the Northern Ontario Baseball Association, and now has permanent possession of the trophy.

U.S. PAPER INDUSTRY CONVALESCENT.

Federal Trade Commission statistics covering the American paper industry for August indicate a considerable improvement in the relative position at the end of the month compared with its beginning. Production of all grades of paper by the mills covered in the report totalled 442,519 tons while shipments amounted to 448,054 tons, shipments exceeding production by 6,535. Stocks on hand at mills amounted to 274,009 tons at the end of the month compared with 279,544 tons at the beginning, a reduction of 5,535 tons. Every kind of paper showed a decrease in stocks on hand except newsprint, of which stocks had increased by 1,609 tons. Book paper stocks decreased 2,409 tons, paper board 1,444; boxboard 2,257; wrapping 1,101; bag 309; fine paper 1,482; tissue 634; hanging 667; felts 1,481; miscellaneous, 1,153. Newsprint stocks equalled six days' average output of all mills; book paper, 11 days'; paper board, 9 days'; wrapping paper 26 days'; bag paper, 5 days'; fine paper, 32 days'; tissue paper, 14 days'; hanging paper, 33 days'; felt and building paper, 9 days'; and miscellaneous 22 days' average output.

Shipments of pulp of all kinds for the month totalled 39,544 tons, which added to 186,362 tons used by the producing mills made a total of 225,906 tons used or shipped against a total production of 195,176 tons, an excess of used and shipped over production of 30,530 tons. Stocks on hand showed a decrease of 30,730 during the month. Groundwood pulp stocks at the end of the month equalled 35 days' average output of reporting mills; News sulphite, 9 days'; bleached sulphite, 2 days'; mitscherlich sulphite, 9 days'; sulphate, 15 days'; soda pulp, 7 days', and mill stocks of other than wood pulp, 4 days' average output. The total mill stocks of all grades on hand at the close of the month equalled 20 days' average output.

The inference to be drawn from these figures is that increased activity in all pulp and paper mills is imminent. With shipments exceeding production in practically all lines and stocks on hand showing serious depletion it is inevitable that an exhausted market must shortly result in increased demand and a general betterment of the industry's situation. There are indications that the increased demand is already making itself manifest.

T. & N. O. GOING NORTH.

T. and N. O. Railway extension work will be commenced this winter upon a seventy mile right of way northward out of Cochrane to Smoky Falls. The estimated cost of the extension is $3,500,000. This decision of the Government to go ahead with clearance and construction was announced yesterday by Premier Drury upon his return to Toronto, following a conference with members of the T. and N. O. Commission in northern Ontario.

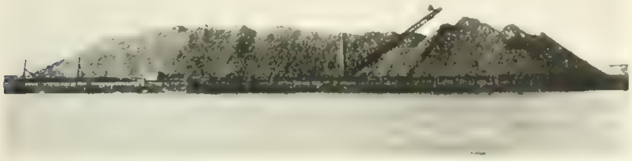
Besides tapping a country of wonderful agricultural, lumbering and mineral possibilities, the new line will pass the big power development on the Frederick House River.

While the extension has long been urgently pressed by north countrymen as necessary to the development of northern Ontario, the Premier said that the early commencement was partially with a view to relieving unemployment conditions.

The plant of W. H. White, tank maker, Montreal was destroyed by fire last Monday night.

PROTECTING WOOD PILES WITH SPRINKLERS.

Through the kindness of Mr. A. L. Dawe, we have been fortunate in obtaining the accompanying photographs showing the eficient manner in which the giant wood pile of the Spanish River Pulp and Paper Mills at the Soo is protected from fire. It has been shown that a fire once started in such a pile cannot be extinguished with ordinary equipment and water supply, and even under the most favorable conditions for fighting, the fire must be discovered and fought within the first fifteen minutes of the blaze.



How the Pile Looks from the Canal.

Figure 1 shows the wood pile as it appears from the canal.

Figure 2 shows a close view of an individual nozzle.

Figure 3 shows the very effective manner in which the water is distributed over the whole surface of the pile and is proof of the efficiency of this system as insurance against a disastrous fire. It will not be difficult to understand why, during the past summer, the mist enveloping the wood pile so resembled smoke that the company was repeatedly advised by passing steamers that the log pile was on fire.

Close-up of a Spray Nozzle.

A Perpetual Fog Envelopes the Wood.

After considerable investigation of nozzles for the purpose, it was decided to use the No. 3B and 4D sizes made by the Spray Engine Company of Boston. The pressure of 108 pounds per square inch is maintained on the lines. The method of carrying feeders with short stand pipes to the nozzles is clearly shown in the illustrations.

The introduction of this system of protection, and in fact the arousing of the industry in general to the wisdom of preventing fires as the best insurance, is largely due to the educational efforts along this line by Mr. F. J. Hoxie of the Fire Underwriters' Association, Boston. Several excellent articles by Mr. Hoxie have appeared during the last couple of years in the Pulp and Paper Magazine.

"HARD TIMES" SOFTENED BY PUBLIC WORKS.

There is nothing novel in the suggestion that in "hard times" there should be liberal expenditures for for public works. All economists agree as to the wisdom of such action But it has not been sufficiently emphasized that the only class of employer capable of "saying it with jobs" is the public; for the public, unlike the average individual or stock company, is able to make an investment without securing an immediate return upn it.

That investments in most public works are ultimately profitable to the public there is little doubt. That public improvements have been subnormal for six years is beyond question. The immediate beginning of enough public improvements to catch up with the six-year deficiency will do more, I believe, to start a general business revival than can be accomplished in any other way.

It should be borne in mind that all the money spent for public improvements during 1916 to 1920 should be divided by two, in order to make comparisons with prewar expenditures, for construction costs were approximately doubled throughout that period. Common labor is now only 50 per cent, and skilled construction labor is about 60 per cent above the prewar level. Per capita money is 60 per cent above the prewar level and will probably not vary much from its new level for several years. During the past 80 years—as far back as reliable data exists—the wage level in America has moved in harmony with the per capita money. Hence it is safe to assume that construction wages are now, in most cities, and in 90 days will be in nearly every city, at a relatively permanent level.

Hence the public has little or nothing to gain by waiting for the lower construction wages, whereas it has much to gain by starting a business revival such as will follow a big era of construction.

Halbert P. Gillette,
Editor, ENGINEERING AND CONTRACTING.

Mr. R. S. Kellogg, Secretary of the Newsprint Service Bureau, was a visitor in Montreal, Toronto and Thorold, this week. While in Canada, Mr. Kellogg, who is also secretary of the International Committee on Textbooks, conferred with the Education committee of the Canadian Pulp and Paper Association regarding plans for educational work in the industry.

It may be no disgrace to be defeated. It is a disgrace to stay defeated.

Technical Section

REVIEW OF RECENT LITERATURE.

A-1; C-5. Molds and Wood Destroyers. Paper, xxvii, (March 2, 1921). In the early stages of their growth molds and wood destroying fungi sometimes have a similar appearance and there is no simple means by which the lumberman and wood users can separate them at sight. The characteristic feature of mold growth on wood is the fact that the minute threads which enter the wood do not bore into the wood fibers or dissolve them away; but pass through the spaces between the fibers or enter them through the natural openings, or pits, which are found in the walls of certain cells. The wood destroying fungi are able to send their threads right through the wood fibers, breaking down the cell walls and utilizing portions of this decomposed material as food. This action produces rot or decay. The principal economic loss caused by molds is through the staining or discoloration of the wood. No greater injury may be caused by the wood destroyers in their early stages.—A.P.-C.

A-6. Substitutes for Coal. EMILIO DAMOUR. **Chimie et Industrie,** v, 11-7 (Jan. 1921). The main characteristic common to wood, peat and lignite which are named as substitutes for coal, is the high content of moisture or combined water, which may reach 85 to 90 percent in the case of freshly extracted peat. This greatly decreases the "industrial calorific value" (defined as the calorific value obtained by means of a constant pressure bomb calorimeter in which the air is introduced at 15° Cent. and the products of combustion taken out at 100° Cent.) and the temperature of combustion; so that in many cases under ordinary conditions it is not possible to obtain more than 40 percent of the utilizable energy of the fuel. The most obvious remedy is to dry the material. Methods are discussed for gasifying and recovering by-products. Though the problem of the utilization of these lower grades of fuels cannot be considered as completely solved, very appreciable progress has been made, and several plants in France are now working quite satisfactorily without any coal. By combining scientific forestry and cutting methods with modern furnace equipment, the saving effected can be raised from 10 to 15 percent to 40 to 50 percent.—A. P.-C.

A-12 Elastic Properties of Gelatin Jellies. S. E. SHEPPARD and S. S. SWEET, **J. Am. Chem. Soc.,** xliii, 539-47 (March 1921). Measurements of the rigidity of gelatin jellies are given, showing that the jellies follow Hooke's law nearly up to the breaking point. —A. P.-C.

A-15. Action of Dilute Mineral Acids on Cellulose. A. WOHL and K. BLUMRICH. **Z. angew. Chem.,** xxxiv, 17-18 (1921). **J. Soc. Chem. Ind.,** xl, 158 A (March 15, 1921). The insoluble residue (hydro-cellulose) remaining after prolonged heating of cellulose with dilute acids is of the nature of a reversion product rather than an intermediate degradation product; such residues are often more resistant to hydrolysis than the original cellulose, and unsuitable for fodder owing to their indigestibility. In the hydrolysis of cotton cellulose by 0.5-3 per cent hydrochloric acid at 100° Cent., the cupric reducing powers of the residue and the solution were determined at different stages. When, after a certain period of heating, the solution was separated from the residue and both were further heated separately with acid of the same concentration, more total reducing sugar was formed than when the heating was continued without any such separation. It is concluded that reducing sugars which have already passed into solution interact, on continued heating, with the residue in the colloidal phase, and form reversion products.—A.P.-C.

B-4. Gasification of Wood and Wood Waste in Producers. GWOSDZ. Bremstoff-Chem., ii (1920; **J. Soc. Chem. Ind.,** xl, 137A (March 15, 1921). It is necessary to remove moisture from wood gas to secure high flame temperatures, and tarry matter if the wood gas is to be used in gas engines. The latter is specially important and the methods employed in gas producers of English, French and American types are described in more detail. One consists of a producer into which air is below a horizontal grate, and fitted with a ball and charging hopper. Cooling and partial separation of tar and dust are effected in a vertical tower fitted with a water spray. Purification is completed in a centrifugal gas cleaner followed by an impact tar separator. The charge of wood waste must be well mixed if the degree of coarseness varies, and a proportion of fines is advantageous. Another producer has superposed a tall distillation shaft and is capable of dealing with wood waste above 20 mm. size if containing not more than 25 percent of water.—A. P.-C.

E-2. Extraction of Sulphite Waste Liquors with Ether and Benzene. B. HOLMBERG. **Svensk. Kem. Tidskr.,** xxxii, 56-67 (1920); **Chem. Zentr.,** ixc, IV, 753 (1920); **J. Soc. Chem. Ind.,** xxxii, 113-4A (Feb. 28, 1921). The extraction of sulphite liquor with ether yields a tarry substance and a white, crystalline compound, termed sulphite liquor lactone $(C_9H_4O_2.OCH_3)_2$. The latter forms square plates or flat prisms, melting-point 250-225° Cent., soluble in ether, alcohol, and methyl alcohol, very soluble in acetone, but only slightly soluble in water. Sulphuric acid converts the lactone into a monosulphonic acid; on subsequent treatment with water a hydroxy-acid is formed. The lactone is only slowly dissolved by sodium carbonate solution, but is readily dissolved in sodium or potassium hydroxide, from which it is precipitated by carbon dioxide —A. P.-C.

E-2. Action of Sulphurous Acid on Fermentation by Yeast. R. HAGGLUND. **Biochem. Z.,** ciii 299-305 (April 15, 1920); **Chimie et Industrie,** v, 158 (Feb. 1921). The toxic action exerted by sulphurous acid on the fermenting power of yeast must be attributed to the undissociated portion of the acid. The inhibitory power reaches a maximum for a 0.007 normal solution of SO_2 for 1 Gm. of yeast in 25 Cc. of liquid. At a concentration of 0.001 normal fermenting power of the yeast is increased. The inhibitory action of sodium sulphite is comparable to that of potassium sulphate. The inhibitory action exhibited by sodium sulphite when added to yeast is but temporary. Potassium sulphate favors fermentation, which increases 25 percent in a 0.2 normal solution of potassium sulphate. According to Euler, there is an adsorption phenomenon (Euler and Cassel, **Z. Physiol. Chem.**, lxxxvi, 122, 1913).—A. P.-C.

E-5. Uniform Digester Chip Charges. Paper, xxviii, 1 (March 9, 1921); **Chem. Met. Eng.**, xxiv, 612 (April 6, 1921); **Pulp and Paper**, xix, 382 (April 7, 1921). Data obtained in a mill-scale study by the U. S. Forest Products Laboratory indicate that the digester charge is, in most instances, a reliable unit for pulp mill operations, provided the operation is uninterrupted and the soundness and species of wood do not vary.—A. P.-C.

E-0; F-0. New Wood Digestion Process. Dr. BRUNO POSSANER. **Wochenblatt fur Papierfabrikation**, lii, 26 (June 30, 1921). (Translated by West in **Paper Trade Journal**, Aug. 18, 1921.). Possaner in a lecture mentioned a large number of patents which have lately been secured with a view to protecting new features in pulping operations for the preparation of pure fiber for use in the manufacture of cellulose esters, photographic paper and textiles. Lignocellulose and similar compounds are colloidal absorption entities which do not obey the laws of simple chemical compounds and these views are at the bottom of new processes for the digestion of wood by step-wise processes and by the successive use of specific solvents and chemical reagents. One group of investigators suggests the alternate action of alkalies and acids and in this way more dilute solution can be used and better cellulose results and larger yields are obtained. Step-wise digestion with dilute and then with concentrated solutions has been tried and also the digestion of wood with mild reagents with either a preliminary or simultaneous treatment with hydrolyzing reagents. Both organic and inorganic reagents have been used. Fifteen percent of the impurities in pulp have been removed by treating the pulp with enzymes; acid chlorides have also been employed as well as oxidizing reagents as hydrogen peroxide, oxigen and air. Mention is made of bagasse as a source of fiber as well as of a by-product which may have some value as a foodstuff for cattle. In the preparation of fiber for textile purposes, fibers of less than 10 mm. length are useless, and the fiber must be of uniform length. Consequently the digestion process must be carefully carried out and a mild treatment is necessary. Mention is made of the impregnation of wood with dilute sulphuric acid. The wood retains the acid but the bast of the wood may be freed from the acid by washing and is not injured. A process which may be applied to the linen industry, in place of the present strong alkaline treatment may be beneficial. Many plants, as hemp, contain only a small percentage of bast fiber suitable for spinning, but a large proportion of fibers fitted for papermaking. In some instances, the short fibers have been separated from the long.—H. E. W.

F-4. Uniform Cooking Acid. Paper, xxviii, 1 (March 9, 1921). Very brief description of a series of satisfactory controls for obtaining a uniform cooking acid: Crandon melted sulphur feed attachment for rotary sulphur burners, automatic draft control for the prepention of sublimation of sulphur, Crandon acid control.—A. P.-C.

F-5. Improved Process for Cooking Sulphate and Soda Pulp. HERMANN GEVERS, U. S. patent, number not given. **Paper Trade Journal**, Sept. 1, 1921, page 34. The direct injection of steam into the digesters in the soda and sulphate process dilutes the liquor. The objection is avoided in the indirect method of heating, but the heat of the steam is not as efficiently utilized. In the present process, the digestion liquor is heated in a direct fired boiler. Chips and a part of the liquor used for the digestion are introduced into the digester and the rest of the liquor, preheated in the boiler, is forced by its own steam pressure either into the top or bottom of the digester. Steam from the boiler is used to cook the chips. The improved process and apparatus avoids the necessity of employing a water fed boiler to supply steam for the digestion. The cooking liquor is concentrated by the heating in the boiler and can be introduced as a dilute solution. The liquor in the digester can be kept at such a concentration that expensive steam evaporation and extra fuel are not required for the recovery of the alkali from the resulting black liquor. The introduction of highly preheated liquor into the freshly charged digester reduces the cooking time. No circulating pump is required as the liquor can be forced into the digester by means of the steam pressure in the boiler.—H. E. W.

G-8. Decker Rolls for Pulp. German patent 338,699, class 55D; **Wochenblatt fur Papierfab.**, xxxiii, 2674 (August 20, 1921). In the case of some rolls used for pressing the water from pulp, the canals which have been inserted with a view to aiding in removing the water, have allowed it to run through and again moisten the pressed sheet. The roll which is the subject of the aforementioned patent is said to be free from this disadvantage, for it is provided with flanges which hold in place several rings separated from each other by him disks of a diameter smaller than that of the rings. There are thus slits between the rings and the slit is deeper than it is wide. The pulp does not become pressed into the slit and the water which is pressed out of it is carried away from the seat of pressure as the roll turns. H. E. W.

H-0. Notes on Bleach and Bleaching. FRANK D. LIBBY, **Paper**, xxvii, 26 (March 2, 1921). Brief outline of the development of the use of chlorine as bleach-agent in the pulp and paper industry, with a description of the method of use of bleaching powder, liquid chlorine, and electrolytic bleach, and the comparison of th bleaching of rags and of sulphite. A.P. C.

K-6. Recovering Newsprint. CHARLES BASKERVILLE and RESTON STEVENSON. **J. Ind. & Eng. Chem.** xiii, 213-4 (March 1921) **Paper**, xxviii, 4 (March 30, 1921). For every ton of old newspapers to be treated about 60lb of caustic soda or 200lb of soda ash with about 100lb of American fuller's earth, are placed in the pulping machine and heated to 50° Cent. The paper should be perfectly pulped, and thoroughly washed, requiring about one-fourth less water than for bookstock. The product may be bleached by treatment with a solution of SO_2, which gives a product as white as, if not whiter than, the original unprinted paper. In practice the bleaching has been accomplished in fifteen minutes in the cold with a consumption of 20lb of SO_2 per ton of old papers. A. P.-C.

K-6. Regenerating Book Paper. CHARLES BASKERVILLE and C. M. JOYCE. **J. Ind. & Eng. Chem.**, xiii, 214-5 (March 1921); **Paper**, xxviii, 4 (March 30, 1921). In reclaiming bookstock an alkaline solution is required to saponify the saponifiable oil in the vehicle of the printer's ink; certain solvents, such as kerosene or gazoline tend to loosen the ink by dissolving the binder, and a solvent, e.g., pine oil, for the rosin used in sizing the paper. The authors use borax (10lb),

(Continued on page 1032

CHEMICAL CONTROL FOR DE-INKING PAPER.

By C. M. JOYCE.

Reprinted from Chemical and Metallurgical Engineering, Vol. 25, No. 6.

During the past fifteen or twenty years, numerous methods for de-inking waste paper have been proposed. Many of these have been tried on a large scale involving great expenditure for equipment and materials. The net result of all this effort, however, may be expressed by saying that most mills are just where they started. The paper maker of today has little faith in new de-inking processes; he is not inclined to spend any time or money trying them. For this reason he is called narrow and unprogressive.

A careful study of the causes of these failures would justify the paper maker in his attitude. Many of those who have proposed de-inking methods have never seen a mill at all, do not have the working knowledge to take account of the interrelations of the market for raw materials and finished paper, cost of chemicals, and special mill conditions. There is no need for extra refinement in de-inking newsprint when the only use for the finished pulp is box board and cardboard filler. There is no use in recommending chemicals worth more than the pulp.

A valuable process for recovering newsprint, discovered by Baskerville and Stevenson[1], has not received the attention it deserves because it has not provided for the mill difficulties in handling slack sized paper. Mill superintendents immediately raised the question whether newsprint can be used successfully in quantity on account of its rapid absorption of water and tendency to form bunches difficult to disintegrate. A mass of newsprint introduced rapidly into a de-inking bath accumulates near the top, forming an unwieldy wet mass which will obten break a paddle before it disintegrates. Without waiting to see how this trouble may be overcome, mill men, with recollections of previous failures, do not care to consider the process. So the old soda boil, followed by washing of the resultant steaming, bad smelling, yellow mass, persists while chemists look on with disgust at the primitive mill methods which are being used.

After such a pessimistic beginning, the reader of this paper will not expect a solution of this important problem and the writer will not be sanguine enough even to attempt to propose one. However, a few general principles have been developed out of years of wide effort with small results, and these will be set forth in the hope that they will suggest improvements which some mill men may find adapted to their conditions.

Apparatus and Treatment.

In preparing book stock and newsprint, it is highly desirable to loosen the ink before subjecting the stock to any pulping process which imbeds the ink in the fiber in such a way that its removal is impossible. It is also desirable to use the mildest possible chemical treatment, best accomplished by adjusting the amount of soda ash to a minimum quantity. A temperature somewhat less than boiling is an undoubted advantage as it makes it possible to turn out a pulp less tendered and less yellow.

Had the outside chemist not already discredited himself by proposing chemicals whose price is out of reason, and apparatus too expensive or unwieldy to handle, he might make a real improvement in the average mill by painstaking adjustment of the factors mentioned.

For de-inking bath, a boiler can be fitted up for external circulation by connecting it at the bottom to the intake of a rotary pump which discharges tangentially near the top of the boiler. By means of a Y-valve connection, the contents of the boiler can be pumped to the washer with de-inking chemicals in an ordinary beater used with the roll lifted clear of the bed plate (so that the ink will not be ground into the fiber), with a steam supply to raise the temperature of the contents nearly to boiling. If the beater has been used only for cold water previously, the wooden filler between the roll knives should be treated to withstand hot water. For removing the loosened ink a Lancaster washer has been used successfully by many mills.

Chemical Control Required.

The form of apparatus used is less important than the careful chemical control of the process. To obtain the desired quality of product, maximum production and minimum cost of chemicals the following factors must be considered: (1) Ratio of water to weight of paper treated, (2) amount and kind of chemicals used. (3) rate of circulation of alkaline bath, (4) temperature, and (5) time. Increasing proportions of water make the pulp flow more freely so that the ink is more readily loosened by the chemical treatment. The amount is of course limited inasmuch as too large a proportion of water curtails the production. The more freely the pulp flows and the greater the agitation, the smaller the amount of chemicals required, because they will more readily come in contact with the pulp. It is important to have perfect circulation in order to avoid the possibility of a bunch of paper lodging somewhere until the chemical treatment is ended and then becoming free and distributing ink specks throhghout the whole mass. Not infrequently excess chemicals are added to overcome defects in reality caused by poor circulation, a practice which adds to the expense and tenders and yellows the fiber. The adjustment of the temperature is also important as too little heat impairs the chemical action and too much heat degrades the fiber. The time of treatment should be determined by taking samples every 15 minutes and washing them on a screen and continuing the treatment until no more ink specks appear.

The success of the chemical control depends on the intelligent co-operation of the chemist with the mill superintendent, a condition which now seems to exist only in the largest mills.

The completion of the trial run of the Premier Paper Mills at Klip River, Germiston, near Johannesburg, marks the inception of paper manufacture in the Union of South Africa. At present the production is confined to wrapping paper, but it is intended to manufacture other grades of paper as the position of the enterprise becomes consolidated. (S. Afr. J. Ind., June 1921.)

The Town Council at Iroquois Falls is planning a public market. The one at Haileybury has proved such a great success, both as giving farmers a chance to market their products efficiently, and housekeepers to buy fresh goods at fair prices that the big paper town wants to do the same. The townsite Office has announced prices of stove wood for the winter as $9.00 per cord for tamarack and $10 for birch, all cut 16 inch lengths.

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[1] J. Ind. Eng. Chem., Vol. 13, No. 3, p. 213 (1921).

PULP AND PAPER NEWS

As stated editorially last week, the year, 1921, will be remembered as a bad fire year. It was brought out at a meeting of the Dominion Fire Prevention Association held in Ottawa, on Thursday last, that the fire loss in Canada to the end of August last was about $6,000,000 in excess of last year. This is a highly discouraging fact, in view of the earnest effort that have been made to bring the vital importance of fire prevention before the community at large. In Ontario, by the way, the loss showed no increase.

Commencing the 1st instant, the Spanish River Pulp and Paper Mills, Ltd. has effected a general reduction of wages. According to a statement made, last week, at the annual meeting of the Company, by the president, Mr. George H. Mead, it has been decided that all those on the pay-roll, from the president downwards, shall accept a ten per cent. reduction in salaries or wages, as the case may be. There is, no doubt, that this is the right way to go about a wage reduction. When mill hands are asked to accept a cut, and find that high-salaried company officials are not asked to make a similar sacrifice, they, not unnaturally, regard the proceeding as inequitable and high-handed. But, when the reduction is made universal, as the Spanish River Pulp and Paper Mills, Ltd., is making it, the mill workers have no reason to complain or unfair or discriminating treatment.

We have been asked by Mr. C. E. Macdonald, secretary of the Engineering Alumni Association, University of Toronto to announce that preparations are under way for the third annual gathering of School of Science men, which will be held in Toronto on the 4th and 5th of next month. Arrangements, this year, are being made on a much larger scale than in previous years, and it is expected that, among the long list of distinguished guests, will be some of international reputation. The graduates are coming from all parts of Canada and the United States, and it is anticipated that upwards of 1,000 will attend the reunion. The program embraces the opening of the new Science Building at the University of Toronto, a dinner dance at the King Edward Hotel, many class reunion luncheons, a Queens vs 'Varsity Rugby game, and finally one of the long-famous "School" dinners on Saturday night. At the annual meeting on Saturday morning, broad questions relating to University policy, technical education and professional matters will be discussed.

The faculty of Forestry at the University of Toronto is next in line on the building and extension scheme of of that organization, according to a statement made, last Saturday, by Dr. Howe, the dean. The converted residence at present in use on Queen's Park is now insufficient to meet the combined needs of the faculty and of the department of botany which share in the space there. Further, the greenhouse is now quite inadequate to meet the demands made upon it, while the experimental garden was recently cut in half, to make space for the new Psychiatric hospital. Several sites have been considered for the Forestry department added Dr. Howe, but no action has been taken so far.

As has been stated previously in this column, the striking printers in Toronto are disposed to be very active in the forthcoming general election. They seem now to be exhibiting a very critical spirit with respect to the contention that a tariff results in high wages and satisfactory employment for the working-man. In fact, Mr. Andrew Gerrard, the president of the local Typographical Union, made the statement last week that the only benefit which could be derived from the tariff was by the employers. He said that his Union had never taken a stand on the tariff, but that, if the empoyers were insistent upon the open shop or free trade in labor, the Union would also insist upon free trade. In this connection, Mr. Gerrard, addressing one of the daily meetings of the striking printers at the Toronto Labor Temple, the other day, told a story of Sir Henry Drayton and a remark that he made when the Tariff Commission was sitting, and the employers appeared before it in search of protection for their industry. "I remember," said Mr. Gerrard, "that Sir Henry asked the employers what wages were being paid in Toronto, and what were the wages in cities in the United States. He was told that the difference was as high as $10 or $12 a week. His answer to the employers was: 'What do you want a tariff for ?' "

The Riordon Company, last Friday, secured an order from the Bankruptcy Court staying proceedings which have been taken against it on two judgments in the Superior Court. This will prevent further steps by the Brunett Saw Mills, Ltd., of New Westminster, B.C., to realize on a judgment of $3,939, and by the W. A. Marshall and Company, of Montreal, for $8,794. The contention put forward by the Company was that, at the meeting of the creditors a month ago, an extension was granted by the majority of the creditors, and, despite this, the two companies named took action. It is reported that another meeting of the Riordon creditors is scheduled to take place soon.

A propos of the Riordon Company, a good deal of comment is going on in the press just now with regard to the fact that its published balance sheet showed it as owing $858,419 Dominion Government and business profits tax, income tax and interest, while, as it is being forcibly pointed out the average individual is closely watched and threatened should he fall behind in his income tax. "The complaint in regard to the Riordon Company," comments the Toronto Globe, on its financial page, "makes the worse showing because of the serious financial position of the Company at the present time, when strenuous efforts are being made with a view to saving the Company from liquidation. The Riordon Company had a long and enviable career as an industrial, and during the years 1917-20, and, in fact, until the 15th February last, paid a dividend of 10 per cent, on common and 7 on preferred."

It is expected that an announcement as to the resumption of activities at the plant of the Kaministiquia Pulp & Paper Co. of Port Arthur, Ont., will shortly be made.

A federal charter of incorporation has been granted to MacDonald and Conyers, Ltd., a new company with headquarters at Ottawa. The new company is authorized to carry on a lumber, timber and pulpwood business, in all its branches. The capital stock is $100,000.

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soap (10lb), kerosene (2 gals.), and pine oil (2 gals. to 2,000lb of bookstock in water to make a 3 to 6 per cent pulp. The stock is soaked and gently pulled apart in a beater thus reducing the mechanical injury to the fibers to a minimum. Time is saved by heating up the mixture to 75° to 90° Cent. by introducing live steam. After pulping, which requires one hour or less, depending upon the machine used; the ink and chemicals are washed away by one of several well-known washers. The pulp may then be bleached or tinted as desired. A selected combination of the chemicals may be used instead of all four with selected lots of waste paper when the composition (including ink and binder) is known. A superior product of desired strength, length of fiber and cleanliness has been obtained by this process.(U.S. patent No. 1,351,092.)—A. P.-C.

K-7. Papermaking from an Engineering Point of View. T. D. NUTTALL, **Paper,** xxvii, 26, (March 2, 1921). Description of the development of the beating engine, with a brief discussion of the advantages of a good circulating hollander, of the effects of cutting and rubbing action, and of power consumption of beaters.—A. P.-C.

K-8. Ultramarine Blue in Papermaking. LOUIS P. SCHWEITZER, **Paper,** xxvii, 26 (March 2, 1921). Brief description of the composition and properties of, and methods of testing ultramarine.—A. P.-C.

K-10. Preparation of Highly Sized Paper. German Patent 339,594, addition to 338,395. **Papierfabrikant,** xxxii, 849 (August 12, 1921). The patent covers the use of products prepared by condensing alpha and beta naphtols and other naphthalene derivatives with formaldehyde as in the case of phenol and cresol, in acid or alkaline solution. The products are soluble in alkalis and are excellent sizing materials. Naphtols is an indifferent solvent, as acetone, is treated with 1 percent concentrated sulphuric acid and formaldehyde is then added, the resin being precipitated. In sizing with this product, a solution containing 10 to 50 grams per liter of the resin is added to the stock in the beater and alum or other acid product is then introduced. It has been shown that an addition of 2 percent of a 35 to 40 percent solution of the alkaline naphthol-formaldehyde resin is sufficient to size paper completely and 3.5 percent rosin size containing 60 to 70 percent rosin must be used to obtain results similar to those secured with this resin.—H. E. W.

K-12. Ventilation of Machine Rooms in the Paper Mill. H. S. TAYLOR, **Pulp and Paper,** xix, 183-8 (Feb. 17 1921); **Paper,** xxviii, 1 (March 9, 1921). Address delivered at the meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal, Jan. 20, 1921. Discussion in **Pulp and Paper, xix,** 299-300 (March 17, 1921). The problem of the ventilation of paper mill machine rooms consists essentially in first removing the volume of moisture-laden air rising from the machines and repacing the volume removed from outside sources, and, secondly, insulating the under side of the roof slab with air of a temperature that will be above its dew point. Two methods can be used for removal of the air; natural draft and positive exhaust. The former is serviceable in machine rooms where production is low, but has not the capacity for the removal of large volumes required under modern practice. Two methods can also be used for supplying replacement air: through doors, windows or other specially designed openings, or else through a properly designed blower system. For raising the temperature at the under side of slab, roof structure, and walls, there are two methods available: through direct radiation suspended from theslab, or through heating the replacement air. The relative merits and estimated cost of installing and operating (in a 2-machine, 100 t. room) positive removal and replacement system with heat supplied through the incoming air and from direct radiation, respectively, are discussed, and the superiority of the former is shown. For the proper removal of the moisture-laden air a hood of proper design is absolutely necessary. For a room housing more than two machines, vertical uptakes must be used; and even with a two-machine mill the vertical uptakes are preferable as the discharge is direct and cost of installation less. Each hood should have three uptakes, each 6 ft. in diameter, the two nearer the wet end of the machine being provided with fans, while the one at the drier end of the hood can be designed for natural draft. The exhaust and replacement fans should be so adjusted that the latter furnish a little more air than the former eliminate, so as to keep the machine room under a slight pressure. In this way openings in floor and walls cannot in any way cause any interference with proper operation of the ventilating equipment, whereas, should this condition of pressure be changed to one of partial vacuuc, through the capacity of the exhaust fans being greater than the capicity of the delivery fans, a rush of air through any opening will result. This inrushing air during the winter season will be of extremely low temperature if from the outside, and if from the basement will be laden with moisture in addition to its low temperature. The more insulated the building structure itself is against outside temperature, the less steam is required from the ventilating system, and the lower the cost of operation. With a system of blowing heated air directly within the drier section, the volume of air distributed by such a system can be deducted from the volume required for machine room ventilation, as the volume of replacement air is simply a total of that distributed through a simple or multiple system.—A.P.-C.

K-22. Characteristics of Cigarette Papers. LOUIS SCHWEITZER, **Paper,** xxvii, 27 (March 16, 1921). Brief description of the different varieties of cigarette papers, of the properties required of a good paper (nature of rags to be employed, appearance, combustibility) and of the methods of increasing the combustibility of the paper.—A.P.-C.

M-1. CO_2 and Combustible Gas Recorder. ROLAND MOELLER, **Paper,** xxvii, 24 (Feb. 16, 1921). Furnace efficiency, as distinct from boiler efficiency, can be properly tested only by continuous gas analysis which not only measures the excess air present at all times, but also promptly detects and measures the presence of combustible gases in the flue whenever they appear. It is important to have not only a record of the CO_2 content of the flue gases, but also a means of detecting combustible gases practically as soon as they form. The Duplex Mono Gas Analyzing Instrument, by means of which this object can be obtained, is described, and the accuracy and value of the records are discussed.—A.P.-C.

P-4. Prompt Care of Minor Injuries. National Safety News (Jan. 24, 1921); **Paper,** xxviii, 2 (March 16, 1921). Suggestions for an intensive campaign showing the necessity for the men to come to the hospital or first aid room with minor injuries, which in many plants is more difficult to impress on the men than accident prevention.—A.P.-C.

SPANISH RIVER OUTLOOK GOOD.

Toronto, September 28.—An encouraging statement of the condition of the Canadian paper industry was presented at the annual meeting of the Spanish River Pulp and Paper Mills, Ltd., held here today. This statement, which was offered by President George H. Mead, brought good cheer to the meeting of shareholders and was supplemented by Mr. Mead later when he stated that the Espanola mill, which had been closed only temporary, resumed operations on Tuesday.

It was also announced at the meeting that, conforming to the tendency of the time, the company had made a reduction of at least ten per cent. in the remuneration of all salaried employees from the president down.

Another question as to whether he considered the price of newsprint as nearly stabilized Mr. Mead answered by saying: "I think it is very rapidly getting to a stable condition. Costs may not be down to bed rock, for we feel that there will be continual reduction in this direction."

Regarding market conditions, Mr. Mead said: "I think the consumption of newsprint is on the upgrade, and with a gradual return to normal conditions such as we are having in the United States, which appears to be on the way in Canada, the newsprint industry is reflecting that improvement. The newspaper is the best medium for bringing to the public attention the sale of any commodity or article, and, therefore, I think, as business conditions improve the newspapers must automatically obtain a reflection of that improving business. United States paper mills that turned from special kinds to making newsprint when business became dull in their lines are now returning to their own specialties, and thus improving the position of the mills that make newsprint alone."

In his remarks to the shareholders Mr. Mead made this general reference to the industry as a whole: "I have been astonished at the lack of confidence that seems to have been displayed by the public in the paper industry of Canada. To my knowledge there has been no paper company in Canada or up to the present time in the United States that has found any difficulty in meeting all its obligations. The paper industry of both countries has been operating upon larger percentage of production than perhaps any other industry of anything like the same magnitude that we have. I consider that Canada is very fortunate in having for one of its greatest and one of its basic industries the newsprint paper business.

"Through a time of exceeding depression, perhaps greater than any before known by the present generation, the newsprint industry has been operating on a production of approximately 80 per cent. of capacity and any industry that can operate upon such a basis, if the plants are properly managed, and the business is given the right amount of care by a conscientious board of directors should be able to meet every fair and proper obligation."

Temporary Shutdown.

Concerning the shutdown of the mill at Espanola for the past week Mr. Mead explained that there had evidently been a misunderstanding as the management merely took occasion in a time of operations under capacity to close down for a few days to carry out some improvements. The company's plants had operated at practically full capacity during July and August following the shutdown from labor troubles in May and June. Owing to low stocks of customers, the demand had been increased for some weeks after the end of the strike, and operations now were around 80 per cent. of capacity.

The directors were authorized whenever they may see fit, to purchase or acquire shares or other securities "in any other corporation or corporations having objects or in part similar to those of the company, or carrying on any business capable of being conducted so as directly or indirectly to benefit the company, and to use the funds of the company for such purpose." President Mead explained that the passing of this bye-law merely restored to the company the right it possessed under its charter as a provincial company until two years ago, when that right was removed from all companies by an amendment to the general law. "It is necessary in the carrying on of our business," said Mr. Mead, "that certain driving companies and river companies and pulpwood companies and sometimes others be held in a small or larger interest, by the Spanish Company."

Mr. Scott commented on the fact that he had recently returned from Australia and New Zealand, and, while in the South Pacific he had seen the business efforts of competitors, he had heard nothing of the Spanish.

President Mead replied by saying that in the export trade from Canada the Australian field was cultivated by the mills with the lower freight charges, while the mills in the interior looked after the market in the middle states which was the largest consuming area.

A hearty vote of appreciation to the directors was passed at the meeting and the former board was reelected as follows:

George H. Mead, president; P. B. Wilson, Thomas Gibson, C. E. Read, T. Watson Sime, G. R. Gray and T. H. Watson.

The former officers were also re-appointed as follows: President, George H. Mead; vice-presidents, P. B. Wilson and Thomas Gibson; secretary, J. G. Gibson; treasurer, A. H. Chitty; manager of manufacturing, C. H. L. Jones; and manager of woods, G. R. Gray.

THE PAPER INDUSTRY IN LATVIA.

The output of the five chief paper mills in Latvia prior to the war was 27,468 long tons of paper, including 21,774 tons of best and medium-grade paper, of which 85 per cent was exported to Russia and Poland. The most important mills were at Ligat and Sloka, the former making writing and drawing paper from rags and the latter stained papers for albums, envelopes, etc. Both mills suffered during the war, but reconstruction is in progress and it is anticipated that the Sloka mill will soon restart operations, thereby obviating the need for importing cellulose from Finland, Esthonia, and Germany. There is a large mill, owned by E. Bruhns & Co., on Lake Jugla, and brown wrapping paper is made at Staizele and Litene; the Staizele mill alone can supply the Latvian requirements for wrapping paper (about 4000 tons) and at Litene about 1613 tons of mechanical wood pulp can be produced and made into printing paper. The entire paper consumption of Latvia amounts to about 6613 tons per annum, and if further wood pulp machinery were installed, the country would be capable of exporting in large quantities.—U.S. Com. Rep., May 1921.

Until you fill the [illegible] it will be hard to convince the boss that you can fill a bigger one.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 1st Oct.—The improvement, which has been noted the last few weeks, in most lines of the paper industry, is still being maintained. In fact, in many branches of the trade, business done during the last week or two has been very satisfactory. And not only has the business been satisfactory, but the enquiries that are coming along in steadily increasing volume seem to presage still better things in store. The general tone, in short, is one of increasing firmness.

An adverse factor is the continuance of the long-drawn-out printers' strike in Toronto. This has had, during the four months which it has already lasted, a detrimental effect, of both a direct and an indirect kind, on the paper business generally. One hears it frequently said by paper men that, were this dispute satisfactorily terminated, business would take a sharp turn for the better. It is because of the detrimental effect that the strike has had, and is still having, on business — a detrimental effect of a more pronounced kind than might have been previously anticipated—that an attempt has been made, in these columns, to keep readers of the Pulp and Paper Magazine very fully informed alike as to the merits of the struggle and as to its developments, from time to time. Unhappily, thus far such developments as have occurred have been rather in the direction of widening, than of closing, the breach between the employers and the strikers. The progress that has hitherto been made has been all in the wrong direction — if such an Irishism may be pardoned. On the most important phase of the dispute the issue has been definitely joined and the lie given, without any necessary beating about the bush, by each side. The men claim that the master printers promised that the forty-four hour week should come into operation on the 1st June, 1921, and that they have gone back on their word. On the other hand, the organization of the master printers, through Mr. Sutherland, its secretary, and the Rev. S. W. Falis, chairman of its Defence Committee, flatly denies that the promise of a forty-four hour week was made.

While it is generally thought that logging operations in the woods this season will be on a much more restricted scale than usual, and while the market for pulpwood at the present time is unusually listless, there are, of course, much reduced, for whereas, last year, a significance a little later, of a stimulation in the production of lumber. The Riordon Company is still cuttings logs in the vicinity of Hawkesbury, though its operations may soon cease by reason of low water. The mills at Kenora and Thessalon are still operating, those at the latter being on a twelve-hour shift, with prospects of continuing until quite late in the fall. A lumberman with important interests in Northern Ontario, said, last week, that his Company proposed to operate actively in the woods during the coming winter. He has secured a good market, he added, in Great Britain and United States. Operating costs in the woods are, of course, much reduced, for whereas, last year, a man could command $70 and $75 a month with board, this year he is glad to get anything over $26 a month and board. Announcement is made that the Shevlin-Clarke Lumber Company, Ltd., in order to provide against unemployment in the Rainy River district, during the coming winter, has come to an arrangement with the Crown, relative to certain matters in dispute, which will ensure its cutting on its limits this winter.

PULPWOOD.—Notwithstanding what has just been said, however, it is generally believed that operations in the woods this winter will be on a greatly reduced scale. In the matter of demand for pulpwood, there is no improvement to chronicle. Most of the mills are so stocked up with pulpwood that they will not need to come into the market, to an appreciable extent, till this time next year. Moreover, the fact that the price of newsprint was on the toboggan has introduced an added element of caution into their buying.

NEWSPRINT.—On the whole, the newsprint outlook must be pronounced to be satisfactory. Quite a few mills are running at 80 per cent. capacity and over, with the majority of them running at 75 per cent. capacity. A good fall demand for newsprint is anticipated, but it is fairly certain that the demand for some time yet is not going to be equal to the full capacity of the mills. It must be remembered that several mills have, within the last year, very largely increased their total newsprint capacity. At the present moment, there seems some doubt as to whether the price of newsprint which has been set at $80 a ton for the current quarter of this year will actually prevail during the whole of the period named.

BOOK PAPERS.—There can be little question but that the recent reductions in book, writing and bond papers has encouraged buying. Orders are coming in satisfactorily as regards number, and — what is not less gratifying — they are showing a tendency towards becoming larger in individual bulk. These reductions were a distinct surprise, and there are "wise guys" who say that they will be followed by further reductions yet in the near future. This, however, is stoutly denied by manufacturers, who say that prices are now on a definite basis which will hold for the remainder of the year.

KRAFT.—The representative of one of the large kraft mills told the writer today that the business done in September considerably exceeded that in August which, in its turn, was a good deal in excess of the July business. He added that, as regards the future, "The outlook is very promising." Moreover, he mentioned that far more enquiries were being received from Great Britain, and this fact he considered, when taken in conjunction with the reports of improvement which were being received as regards the kraft possibilities in that country, augured well for the prospects of export trade.

WASTE PAPERS.—The market in waste papers has been lifeless and listless for a very long while. But, within the last two or three weeks, demand has substantially increased, and, in response, there have been some few advances in price. Orders for domestic rags are coming in more freely, and there is a prospect of an increase in prices in this line, before long.

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BOX BOARDS. Owing largely to the increased demand of the paper box industry, there is a gratifying increase of activity in the movement of board which is keeping the mills busier than they have been in a long while.

TOILETS AND TISSUES. Business in toilets and tissues continues to be of a satisfactory kind.

NEW YORK MARKETS.

New York, October 1. (Special Correspondence). All indications point to continued growth in activity in the paper industry. Demand for practically all grades of paper is on the rise, with both consumers and jobbers buying in appreciably larger quantities. Jobbers are once again filling their shelves with paper, indicating that they are of opinion that prices have about touched bottom, and that supplies acquired at prevailing market levels will soon prove to be a profitable property.

A pleasing development of the week in New York is the settlement of the difficulty in the printing trades locally. Up to last Thursday it appeared as if another strike would occur in the book printing branch of the trade, but the printers' union has agreed to arbitrate the question of wages to prevail over the coming year and all danger of a walk-out seems past. Printers are asking for an increase of $5 per week in wages while employing printers have proposed a cut of $10 a week, arguing that whereas virtually all other industries have this year reduced wages, the pay of printers has advanced, an increase of $5 a week being granted last January. It has been agreed to submit the matter to arbitration, and in the meantime the wage scale will be continued unchanged.

Some of the reports received in connection with the newsprint trade are fairly bullish; others tend to have a depressing influence. An official of one of the large newsprint producing concerns in this country contends that there is a possibility of higher prices on newsprint by the end of the year.

Other reports, of a bearish character, say that interests representing Hugo Stinnes, the German industrial magnate, will invade the United States market with 2½-cent newsprint. The paper to be sold at this price basis is said to be of standard specifications and will be delivered c.i.f. Atlantic or Gulf ports on 30-day terms. Offerings are expected to be made at once in New York by a representative of the German paper interests, the price mentioned being 1½ cents a pound under the prevailing domestic price and one cent per pound below the present quotation of Norwegian, Danish and Finnish manufacturers.

The newsprint market locally is fairly active. Publishers are buying in comparatively good volume, and the movement of supplies into contract channels continues at a regular pace. Consumption of newsprint is certainly on the rise. Newspapers in New York are printing large issues almost every day, advertising picking up at a rate necessitating larger-sized papers. Today inaugurates the new contract price basis of 4 cents per pound, or $80 per ton, f.o.b. mills on standard newsprint in rolls, and expectations in the trade are that the lower price will serve to stimulate demand considerably.

Figures compiled by the Federal Commission in its August report on the paper industry go to show that matters are appreciably improving in the paper trade. A total of 442,519 net tons of paper of all grades was produced by United States mills in August, showing an increase of 72,090 tons over the July output. Despite this sharp increase in production mill stocks decreased during August, amounting to 274,009 tons at the end of the month in contrast with 279,544 tons at the beginning of August. This indicates that manufacturers are shipping out much larger quantities of paper and that they are gradually liquidating a part of their holdings notwithstanding that they are enlarging their output. Doubtless the figures for September will show an even more encouraging statistical position because it is freely acknowledged that business in paper of various kinds showed greater improvement during the past month than relatively in any month thus far this year.

Wrappings are firm in price and are moving in in-offering up to 3 cents a pound for Scandinavian kraft kraft wrapping mills have enough business to keep them engaged for two months or longer, and prices are trending upward as a result of the larger demand and the strengthening of raw material costs. Tissues are steady and under good inquiry. Fine papers are moving in better amounts every day, with jobbers taking a good portion of supplies for stocking-up purposes. Box boards are in a healthy and fairly lively market position and prices are firm. Plain chip is $42.50 to $45.

GROUND WOOD.—An indication of the strong statistical position of ground wood can be had from the Federal Trade Commission's report of August, which shows that production during that month was below that in the preceding month, amounting to 73,666 net tons, against 75,405 tons in July, and that mill stock decreased sharply, totalling 166,601 tons at the end of August, compared with 196,088 tons at the beginning of that month. The probabilities are that mill holdings

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have been further reduced in September, as reports generally state that grinders have been unable to increase their operations owing to low water in mill streams.

The market is quite firm in tone and most of the ground wood being offered out is finding ready buyers. Demand is general in character, coming not alone from newsprint mils but also from tissue, wrapping and board manufacturers, who are absorbing relatively large amounts of mechanical pulp. Prices hold steady at an average quotable basis of between $29 and $30 per ton f.o.b. producing plants, with some sales reported figuring out at as high as $40 a ton delivered consuming points.

CHEMICAL PULP. There has been a sharp advance in kraft pulp prices. Sales of Scandinavian kraft on the spot in New York have been recorded at 2.75 cents a pound ex dock or warehouse, denoting a rise of fully half a cent from the low levels touched by the market recently, and buyers are now reported offering up to 3 cents a pound for Schandinavian kraft for spot shipment without finding pulp available. Indications are that spot stocks of foreign kraft have been completely liquidated by importers, and higher prices are named by manufacturers for pulp for forward shipments from primary sources, around 2.75 cents being the minimum quoted by the Swedes at present.

The advance in kraft is viewed in a very bullish light by members of the pulp trade who say that the increased demand and higher prices for kraft are forerunners of greater activity and better prices on sulphite. Prices on the latter are firmer in tone and display an upward tendency though no actual advances have been noted. Demand appears to be slowly but surely expanding and the market is characterized by more trade activity than has been evident in some time.

RAGS.—The rag market is at last beginning to evince a stronger tone. Dealers are holding rags with considerable more firmness and the prices quoted are mostly on higher levels than have been prevailing. In fact, sentiment is so strongly in favor of a rise in values that a majority of dealers and packers are holding off in selling, being satisfied to wait for a while in anticipation of higher prices. Roofing rags are moving upward in value in a fairly spectacular manner. Sales in the Middle West have been reported at as much as 1.25 cents per pound at dealers' points, while mixed satinets of No. 2 roofing stock have sold in New York at 85 to 90 cents a hundred pounds f.o.b. this city. Old whites are higher, with dealers quoting 4.50 to 4.75 cents a pound on No. 1 repacked, 3.75 to 4 cents on No. 1 miscellaneous and 2.25 to 2.50 cents on No. 2 miscellaneous whites. Old thirds and blues are firming, with sales of repacked material reported at 2 to 2.25 cents a pound at shipping points. New cuttings are very firmly held. Packers want 9 cents and more for No. 1 white shirt cuttings, 5.25 cents for fancy shirt cuttings, 3.50 cents for No. 1 washables, 5.75 cents for blue overall cuttings and 7.75 cents for unbleached muslins.

PAPER STOCK.—High grades of old paper have scored further price advancement this week and are still going strong, with demand from consuming quarters quite brisk and with dealers complaining of difficulty in locating all the supply wanted. No. 1 soft white shavings have sold at 3.25 cents per pound f.o.b. New York, hard white shavings of No. 1 quality at 3.85 cent, old book stock at 1.50 cents, overissue magazines at 1.75 cents, ledger stock at 1.75 cents, old kraft paper at 2.15 cents, folded newspapers at 65 cents and No. 1 mixed at 50 to 55 cents. Mills have let up in their buying of low grades to an extent but this has had little influence on prices, packers viewing the quietness as a temporary affair and not pressing matters. On the other hand, demand for the better grades is steadily expanding, with an especially strong inquiry for soft shavings and book stock.

OLD ROPE AND STRINGS. Old rope is firm at a market basis of around 4.25 cents a pound for domestic manila rope of No. 1 grade. Old bagging is quiet but steadier in tone, with dealers asking 75 cents per hundred pounds for No. 1 scrap.

SAY IT WITH PUBLIC JOBS.

(Editorial from Engineering and Contracting, Chicago, Sept. 7, 1921).

In his Labor Day address Secretary Davis of the Department of Labor urged an immediate increase of public works expenditures. Pointing out that fully six million workers are jobless he said: "This year Labor Day must be dedicated first of all to meeting this imperative human need of the idle."

Many newspapers have been using the headline, "Say It with Jobs," in urging employers to give work to ex-army men. But the advice can not be folowed by many employers, without danger of bankruptcy, until there is assurance that there will be a demand for the products of the men they hire. However, there is one class of employer than can and should act upon the "Say It with Jobs" slogan. We refer to cities, counties, states and the Federal Government. The governments are employers who need fear no bankruptcy, for it is not necessary that their products be sold. Roads, streets, waterworks, sewers, school buildings, and all that class of construction known as public works, are the products of the employing public. The economic demand for these products are never filled, for the public is never as alert to meet economic demands as are the private corporations. There have been six years of subnormal construction of public works in America, folowing centuries of inadequate appropriations for public works.

If the last clause is questioned, consider the significance of the fact that scarcely 15 per cent of the total mileage of country roads have a surface that is graveled, macadamized or paved! More than half the streets and alleys of our cities remain unpaved, and, of those that are paved, fully half hould be repaved in order to reduce the wear and tear on automobiles and motor trucks. Only a small fraction of our city water supply is filtered. We have next to no sewage disposal plants. Our waterworks pumping plants are largely obsolete and inadequate in capacity. Our schools are crowded to a disgraceful limit. Our city children lack adequate playgrounds and our city adults have almost have almost no playground at all! These are but a few of the outstanding facts that indicate the woeful inadequacy of our public works.

We mention such inadequacy because there are many local complaints whenever increased taxation for public works is proposed. It is, in fact, this never ceasing opposition by taxpayers that has always resulted in less than adequate expenditures for public works. We believe the time has come to brush aside all such selfish

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opposition to public improvements, not merely because the improvements are needed but because there are millions of idle men who need the work that can be given them by the public. It is cheaper, in fact, to support men by giving them work than to support them by giving them charity. In any event they must be supported.

Let it not be overlooked that every man thus given a job automatically creates a job for at least two more men. Work begets work. The wages that are paid to the construction worker, quickly are passed along to the textile worker, the food producer, the moving picture actor, etc. Yes, we include the "movie man," the producer of pleasure—and why not? Why do we work but to add to our luxuries? There are many men of such myopic vision as to things economic that they see no useful work save that adds "necessities." Heaven help their shortness of sight! It is more than 120 years since Americans ceased working merely for necessities. In Engineering and Contracting of August 3 it was shown that the buying power of the average worker is five times as great today as in the year 1800. But in the year 1800 our forbears were not without the "necessities." They had their log houses, their homespun clothes, their "three squares," and—precious little else.

On day's work in a week would now buy all that a Daniel Boone earned in five days, and with 8 hours' work instead of 12, at that. So, four-fifths of all that we buy is purely luxury, measured by the standards of early nineteenth century.

It is true that all the men and women now out of jobs form only 15 per cent of the total number of income earners and this is about the maximum percentage of idle that every "hard times" since 1893 have produced; but, like Mercutio's wound, "It is enough" —enough to kill happiness for three times six million people. Happiness for these idle people and their families is fortunately to be had at no distant day and at no ultimate cost, if the public will rouse itself to its duty. Bonds for all needed public works can be sold in every American city, provided the newspapers and magazines will support such a project as whole-heartedly as they supported the Liberty Bond issues. Let us call these new loans Prosperity Bonds, and let us throw all our enthusiasm into the campaign to sell enough of them this fall and winter to insure a general revival of business.

MOISTURE TESTING ; WHAT ABOUT THE MAN ?

By T. LINSEY CROSSLEY.

In seeking to establish a standard for moisture testing, are we not focusing too much on the method and too little on the man ?

Can it not be truthfully said that most of the troubles in moisture testing have arisen because the work was left in the hands of unqualified persons? First, persons in mills with no idea of the importance of their office, and employed by people who had no idea of such importance, and, secondly, persons with scientific training, but no idea of pulp mill conditions, suddenly asked to act as referees.

Recent trend toward excessively finicky detail is not likely to improve the conditions.

The form of test that can be made in the simplest and quickest way, and get correct results in the shortest possible time should be the aim ,not the perpetuation of any particular form of test.

The idea of limiting the making of referee tests to individuals with certain qualifications is good, but among those qualifications should be that of actual experience in mills.

The attitude should be that of the surgeon approaching an operation for which there is a well known technique, but which is always governed by the circumstances and by the idiosyncrasies of the patient. No surgeon would agree to standardize an operation, and no referee should be required to make standardized tests, but all referees should be informed as to previous work on the subject and the circumstances of the present case, otherwise they become mere machines, and the mills would save by employing any honest handy man.

The case is different where no referee is called in, but in these again the facts are wanted and may be obscured by a dictum as to the use of this or that form of test. In such a dispute the agreement in result of two differing forms of test would tend more to a satisfactory settlement than concordant figures obtained by repetition of an identical procedure.

An instance in each case can be cited.

In the first example, that of an unqualified referee, the material was in 500-pound bales of dry sheets. They were tested by the usual man and found short. The mill's chemist then tested in a different way with the same result. A claim was made and the shipping mill sent a man from a firm of analysts who had no mill experience. He arrived without notice in the absence of the chemist, broke a number of bales over the room, cut wedges with bases four to eight inches wide, and, ignoring the fact that the pulp had been shipped two months before and had stood for some weeks in a well ventilated ware-room, did not reweigh any part of the shipment but based his calculations on the shipper's gross and claimed to have confirmed the invoice. The consignee accepted his results and paid his fees and expenses to avoid further trouble because the referee had made a "standard wedge test." If the chemist's advice to fight it out had been taken, it would have been brought out that the wedge method was not standard for dry pulp in sheets, and had been found faulty for this work by one of its originators,* who had devised the method for a very different class of pulp and package.

In the case in point the referee prejudiced his whole case by not weighing his test bales or reweighing the carlot, which had stood in an open room for weeks in which case the bases of his wedges would represent the portion most likely to be affected, as being the exposed edges of sheets.

A case of the other kind can be cited in which two mills made tests in the same way and were quite satisfied until a third mill made the test in a different way and was able to demonstrate the weakness of the test made by both other mills and incidentally made good on a heavy claim.

By all means let us get at the facts regarding the moisture test, and put them on record for guidance, but let us not be in too great a hurry to shackle our referees.

---

*R. W. Sindall, "The Sampling of Wood Pulp," pamphlet, published by Thomas Poulter and Sons, London. On page 10, referring to tests on dry pulp in sheets, is the following: "It was found that the first method, of cutting wedge-shaped pieces, invariably gave too low a percentage."

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EDITORIAL

KNOCKING OUT THE PROPS.

The export of pulpwood from Canada is knocking the props from under the pulp and paper industry in the Dominion. In the first place it is reducing the reserves in Canada while at the same time tending to lengthen the life of present stands in a country to which the wood is exported and providing a cover under which reforestated areas will have an opportunity to arrive at a productive age. Our forest, then, may be likened to a tree which is being chopped at on two sides. The tree will fall just that much sooner and our forest industries will collapse prematurely because of the undermining influence of excessive exports. It is quite obvious that, by shortening the productive period of our standing forests through excessive exports, and at the same time assuming that our neighbours are awake to the necessity of reforestation, there will necessarily come a time when they will be producing pulp from conveniently situated areas in competition with the product that we shall have to make from wood cut and transported at an expense that will have continually grown greater until its cost will be a serious disadvantage to the Canadian mill. We are not argueing for an artificial situation that will falsely encourage dependence on present stands of timber for future operations. The fact is, that the present stand is no more than we require to keep our mills going until properly protected re-growth becomes available. By cutting into this margin we are simply inviting a period of inactivity for our wood using industries.

The importance of some protective measure becomes apparent when one stops to consider the character of the country that is producing the timber used in our mills today. The larger proportion of land logged over is purely non-agricultural forest soil and must be maintained as a forest, not only to maintain timber growth but to prevent the disappearance of the very soil itself.

Doubtless most of the wood which is exported is taken from land which is properly classified as agricultural and which will in time be cleared and cultivated. It is very likely that some of this wood is taken from non-agricultural lands and it is possible that some of it is sold by settlres who have taken it from lands which they did not intend to settle or which border on their own establishments. The wood which is so marketed does not contribute through taxes, stumpage or assessments to the expense of protecting the standing forest and incidently the homestead of the settler. It is time that the million cords or so which we export should bear its share of this necessary burden. In fact, this wood should contribute enough to bring our forest protective agencies practically to a 100 per cent efficiency basis. We are very far from that at the present time. The wood which is cut from crown lands and necessarily used in Canada pays not only for the protection of what is left but has to cover also the protection of the wood which is permitted to be freely exported. The situation is not fair to the domestic consumer of Canadian wood. He is paying fire insurance on his competitor's property, as it were.

Another point which might be mentioned in this connection is that the cutting of the wood which is exported contributes probably a larger proportion of the fire hazard than the lumbering of wood on crown lands and, as has been remarked, without contributing to the expense of protection.

The troubles outlined above could be at least partly corrected by an export tax, the proceeds of which should be expended entirely in the protection and conservation of the forest. There are several possible effects of such action to be considered. First, but not necessarily most important, is the effect on the American manufacturer. Such a tax will undoubtedly make his wood cost more and might result in a slightly less volume of exported wood. If this volume is decreased it will very likely be because the extra cost to the mill will permit a greater haul of wood harvested in other parts of the United States or possibly even brought from other countries. This of course, would prolong the life of our own forests. It might bring in a little less United States money temporarily, but in the long run would result in a greater aggregate of payments to the Canadian producers. It would mean a little more mining of American wood and a little more conservation of Canadian wood. There would doubtless be fewer fake settlers who squat on an area with the sole purpose of clearing and selling the timber. There would be more wood sold by farmers and settlers to the Canadian mills. The demand by the Canadian mills is unquestionably sufficient to use the wood that a settler could take from as much land as he can clear and cultivate in any season.

The complaint of the settler will be heard to the effect that an export tax will restrict his market and put him at the mercy of the pulp wood buyer for the Canadian mill. A moderate tax however, would still leave sufficient demand for export wood to assure him of a competitive market and a fair return. There is no doubt but that the farmer can produce wood more economically than the mill. In the first place by doing his own work he works most efficiently. He does not have to maintain a camp, he has no expensive overhead, administration, and supplies and for the most part he is consuming his own produce and has an opportunity of using his own labor that would otherwise be wasted.

There is no doubt but that in times past the mills having a monopoly of certain districts have squeezed the farmer until he did not get a decent day's wages for his wood cutting operations and it is the duty of the mills in their own interest, to give fair treatment, even generous treatment, to the settler.

With provision protecting the settler against unfair exploitation, there seems no question but that an export tax of pulpwood will result in better protection and conservation of our forest, which is a problem which deeply concerns every Canadian citizen and which is a factor of greatest importance in the future development and prosperity of the Dominion.

TRADE MARKS WANTED.

There seems to be a lack of appropriate and distinguishing trade marks for individual makes of Canadian pulp and paper. A few firms are using distinctive marks on some of their product, but there are many which do not even present their name on the individual package. If the purchaser is patriotic enough to ask for a Canadian product and most of them will at least be attracted by some token that the article is a Canadian product, we should think it worth while for the manufacturer to use a label which would convey the idea in attractive form. An instance came to the attention of the editor not long ago when in purchasing some paper napkins the clerk was asked whether they were made in Canada. The clerk did not know and there was nothing on the package to indicate the country of their origin. To one who did not know the name of the mill, which fortunately did appear, the chances are at least even that a customer not particularly interested in the Canadian paper industry would have taken the imported napkin, shown by the side of the Canadian product.

It is noticeable also in the shipping rooms of the paper mills that the trade mark of the Association is not as much in evidence as it should be, but even with the Association mark on the outside of the package there should be some way of knowing the manufacturer of the paper. In the case of a watermarked product, it is possible for one knowing the manufacturers of the paper to tell at once whether it is Canadian paper and in probably the majority of our watermarked papers there is now to be found the words "Made in Canada" but the outside of the package usually does not carry such a message.

We do not often see an unopened package of wrapping paper but the chances are that a good deal of it is not labelled, either as to the country or mill of origin. In the case of most toilet papers there is generally a name for the particular type of package but nothing to indicate the manufacturer.

A short time ago the editor attempted to get some information on the origin and significance of trade marks but we succeeded in getting replies from only a very small percentage of Canadian mills. This would indicate that some companies do not attach much importance to the trade mark. It may be that they are turning out a product that they are not particularly proud of or it may be simply a matter of indifference. We know one concern that has spent some money and a lot of thought on the design of an appropriate trade mark and one which would carry not only a message as to the origin of the product but of confidence in the quality. It is a matter that is certainly worth consideration and a problem which every mill will have to meet if we are to get the fullest benefit from the distribution of our pulp and paper. It will mean then that each package is a salesman and considered in that light it is just as important that the package carry a trade mark as that a salesman carry and present his card.

A GOVERNMENT RAILWAY GIVING GOOD SERVICE.

At this time when so much is heard of the general inefficiency of Government operated services, an opportunity for complimenting such organizations should be improved. Last week the editor had occasion to travel Iroquois Falls by way of the Grand Trunk to Toronto, the T. and N. O. to Iroquois Falls and back by the same road to North Bay and then by the Old Canadian Northern to Ottawa and home from there by Grand Trunk. The return was made on the Continental Limited and anyone who thinks the Government cannot give as good service as will be found anywhere, has a surprise in store by taking a trip on this excellent train. For easy, comfortable riding, accurate schedule and general courtesy and thoughtfulness of the service, there is really nothing left to be desired.

BUYING CANADIAN PULP IN THE UNITED STATES FOR CANADA.

A curious situation is coming to light with regard to the purchase of pulp from certain Canadian mills for Canadian consumption. It appears that some manufacturers have offices on the other side of the line and an order for pulp must go through that office, and, to add insult to injury, payment is demanded in American funds. This is certainly a very curious arrangement and a policy which we should call shortsighted to say the least. At a time when it is urged with good reason that Canadian mills should quote in Canadian dollars in foreign markets, it seems almost unbelievably ridiculous for a Canadian mill to ask its neighbor to go to New York or some other American city for its own product. We should hardly call that the acme of cooperation.

The experience of the past summer has shown the futility of trying to fight a fire that has gained headway. Slash debris adds to the hazard of fire and the difficulty of getting at and fighting it. The rebate on stumpage the Quebec government is making to encourage employment in the woods will pay for slash disposal.

Now is the time to begin.

A Trip to La Loutre---The Gouin Dam.

Seldom has the editor more greatly enjoyed a few days respite from work at the desk, than was the case a few weeks ago when, in company with Mr. F. J. D. Barnjum of Annapolis Royal, N.S. and a few other friends, a trip was made to the Gouin Dam at La Loutre on the St. Maurice River. Few people realize the enormous importance of the potential influence of this dam on the industrial possibilities of the Province. But this is getting a little ahead of our story and will be referred to again later on.

Things often happen quickly. In this case a telegram from St. Johns asked for an immediate reply as to whether the editor could join the party the next day in Quebec ready for a trip to the woods. An affirmative reply was dispatched in a very few minutes. Leaving Montreal on Friday morning, the afternoon, was spent visiting the Quebec Industrial and Agricultural Exposition where a surprising variety of products of the industry of the Province were shown. It seemed however, that more attention might have been given to the Pulp and Paper Industry, and with the exception of the success of the Brompton Pulp and Paper Company in their carrying away prizes with their Belgian and Clydesdale horses, the pulp and paper companies were not in evidence. It might be worth while for the Association to consider the preparation of an educational exhibit which could be shown on such occasions in order to acquaint the thousands of spectators with the importance of the principal features of our industry.

Venetian Methods adopted by Indians.

Leaving on the evening train of the National Railways on which an excellent dinner was served, we were able to get a few winks of sleep before being deposited at two in the morning at the wrong station. Our tickets read to Manouan where the local engineer of the Streams Commission is located, but as Manouan is a flag station and Sanmaur, the next preceeding station is a regular stop, the colored gentleman removed our baggage and assisted us to alight at the wrong place. The porter gave the signal for the train to stop and pick us aboard again but no attention was paid to it and the train rumbled on. With the aid of a flash light, we made our way up the track towards Manouan station which fortunately was but three quarters of a mile distant and as it was no longer raining, the journey was not as unpleasant as it might have been. It cannot be said however, that we entertained particularly friendly feelings for the conductor and engineer of that train.

It might be remarked that we met a stranger, while waiting at Manouan for the train home, who had been served with about the same treatment as ourselves by the train crew, only in his case, instead of being put off at Sanmaur, he was carried past Manouan and dropped in the middle of the night in the middle of the woods and was incorrectly advised that his station was still further along the line. We trust that this kind of treatment is not typical of the usual service to be expected from the Government railways but such incidents certainly do not improve the reputation of the road nor the desire of people to patronize it. While commenting on the railway, it might be suggested that a buffet service between Montreal and Hervey Junction would be greatly appreciated by travellers and ought to be a paying proposition.

Old Hudson Bay Post at Weymont [illegible]

Mr. L. M. Mathis of the Quebec Streams Commission had been expecting us and was good enough to come down the track with a lantern and escort the party to his house where a cordial reception and most hospitable entertainment was accorded us. It is a very important although probably little appreciated asset of a Government department to have such generous and good hearted people in their employ and we wish to emphasize the kindness of both Mr. and Mrs. Mathis in the trouble they took to make our visit pleasant and worth while.

An Indian Family in their Canvas Home.

A friend of Mr. Mathis, Mr. Angus Hodgson of Montreal, who is known to a good many pulp and paper men went up on the same train to spend a few days hunting and in the morning two of us went along with

Full Blooded Indian Building Log House

Mr. Hodgson and his guide when our host took them part way up the Manouan River to start him on his journey. This was on Saturday morning. On Saturday afternoon we all went over to the Indian Settlement at the Hudson Bay Post and some of the sights we saw are shown in the accompanying pictures. Perhaps the most interesting was the method of conveying a hay stack from the meadows several miles up the Manouan River. A raft was made by constructing a platform across two canoes and towing this with its burden of hay by means of a motor boat. The operation seemed to be very successful. The Hudson Bay Post is considerably more than 100 years old and the old headquarters are shown in one of the pictures. Quite a number of Indians make their headquarters at the post but most of them at the time of our visit had left for the fall hunting. While there are a number of substantial wooden houses, some of them very comfortable and attractive, there are also a number of tents in which the families live the year round. The idea of a canvas wall for shelter with the thermometer 50 below, did not appeal to us as the height of comfort but the Aborigines seem to thrive on their mode of living if plump and cheerful children is any indication. There is a Catholic Church at the Post, apparently large enough to accommodate the entire settlement and services are held periodically. The Indians make excellent bark baskets and some mocassins which are disposed of through the store at the post and the store at Manouan. There seemed to be almost no gardening at the Indian village.

From the Papoose up.

Through the courtesy of the Brown Corporation, a special trip was made up the river on Sunday. It is about fifty miles from Sanmaur to the dam. The first thirty miles are covered by an excellent motor driven scow which has a capacity of about 7 tons of freight. The cargo space was pretty well taken up with stores for the Brown Company's camp and the canoes and luggage of Indians going up the river. The start was made about 9 o'clock and the journey up this swift flowing stream was a most interesting experience. Both sides of the river had been logged off for saw timber and pulpwood and after repeated fires, contain now practically nothing but hardwood growth, although there are evidences in patches of a struggling undergrowth of young conifers. Here and there we could see dead spruce and fir, victims of the bud worm, and there was an occasional Jack Pine which was being attacked by an enemy unrecognized by us. Quite a number of trees have been blown down, particularly in places where there is only from 6" to 1 foot of soil covering the ledges. This shallowness of soil makes it particularly imperative that logging operations along our Canadian streams be carried on with the utmost care in order that the ground shall not be laid bare and thus exposed to the sure and certain erosion that will follow and wash the ledges completely bare.

Unloading Works at Rail Head.

Several rather swift rapids had to be negotiated and at one place we found an Indian family awaiting the approach of the boat and signalling to be taken aboard. When this had been accomplished, our journey was resumed and the Indians landed further up the river, where a camp site had been picked out and some of their luggage previously deposited. This family furnished a rather novel bit of entertainment in the ability of a young brave of about 3 or 4 years of age who exhibited considerable ability as a dancer and showed a clever little step which none of us were able to imitate. The nickels he gathered in have probably since bought him some allday suckers or perhaps some bright trinket to store away in his pocket. We should also mention that on the boat was the owner and driver of the dog team that won the big race at Berlin, N.H. last winter.

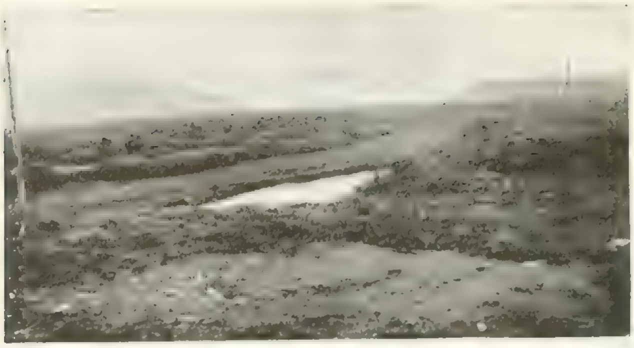
The landing was reached about three in the afternoon and there we found the woods trolley waiting. The huge derricks used for unloading the tons of supplies required for building the dam were not required to get us ashore. We were soon on our way in the novel conveyance shown in one of our pictures along the 20 miles of rail to the dam. We travelled in a Ford truck fitted with flanged wheels and capable of making about 12 miles an hour. For heavier goods there is a huge Knight car which is equipped with a trailer. This was used for transporting the Indians and their supplies. It should be stated that there is an arrangement between the Brown Corporation and the Quebec Streams Commission whereby members of the latter and their guests are transported over this route without charge, an arrangement and a convenience which was greatly appreciated by our party.

We have not yet seen the famous Toonerville trolley credited with some events related and witnessed on our trip. The skipper who guided the car and who is also in charge of the Brown Corporation's fleet of scows and tugs, told of chasing a moose for more than a mile along the track without being able to overtake him except to get a blurred snap shot with the camera. We noticed under the seat of the conveyance, crow bars, axes, jackscrews, etc., for replacing the car on the track as de-railing is by no means an infrequent occurrence. The wonder is in some places why the car stays on the track at all. A close approach however, to the roughness of the journey can be had by travelling by trolley in Canada's second largest city over certain parts of the lines.

The Big Dam, up-river side, showing gate house and sluice house.

On arrival at the dam about five we found it a very interesting place. There was time before supper to inspect the dam and the gate house and to have Mr. Mathis explain the purpose of the structure and the operation of the gates. The dam is 1,700 feet wide and 80 feet from the bed of the river below the dam to the water level behind it. A sluice way permits the passage of logs, without damaging the ends, from the lake to the river below. A counterpoise and a system of gears and suspension chains makes it possible to raise and lower the mouth of the chute according to the water level in the lake. A provision is made in the dam for a second log chute if this is necessary, on the opposite side of the dam from the one now installed. When the gates were closed the water began backing up in the valley but the basin was not filled to the overflow level of the dam for two years, during which time the water backed up approximately a distance of 140 miles, thus forming the greatest volume of artificially stored water anywhere in the world. By the opening of the gates any volume of water that may be required can be passed through and at the time we were there two gates were partly open so that water at the rate of 5,000 cu. ft. per second was permitted to escape from the lake. In order to furnish additional water because of the dry season this year, the level in the lake dropped about 18″. If the gates were all opened wide, the rush of water would cause a flood in the valley equivalent to a cloud burst. Even with normal freshets in the spring the river level rises from 5 to 7 feet. The danger of flood is therefore, enormously minimised by the presence of this great mass of concrete which holds back such a vast volume of water. A portable motor, with belt connection to the gate adjusting gears, serves for the raising and lowering of these great steel plates which close the openings in the dam. In addition to these gates, there are recesses for two sets of stop logs in the upper face of the dam. Sometime ago, the editor saw a complete series of photographs which showed the progress of construction as it was carried forward by the contractors, Fraser, Brace & Co. of Montreal.

The significance of the dam in the development of the industries of Quebec is but little understood and very imperfectly appreciated by those who have not



Looking South from Indian Village showing Transcontinental Bridge over the Mannan River near its Junction with the St. Maurice.

come directly in contact with its benefits. The experience of the present summer is but an intimation of the wonderful possibilities of this great project and furnished proof of the foresight of those in the Provincial Government in undertaking this enormous piece of work. We understand that the agreement of the Quebec Streams Commission with the Power Companies at Shawinigan Falls, is that the flow of the St. Maurice River shall be maintained at a minimum rate of 12,000 cu. ft. per second. It was mentioned above that at the time of our visit, the gates were open to permit the escape of 5000 cu. ft. per second This means that the natural flow at Shawinigan Falls would have been only 7000 or 8000 feet per second if the normal volume of the river were available; thus the power output of the hydro-electric stations at that point has been increased this year by practically 70 per cent. Mr. Mathis assured us that a much greater volume of flow could be maintained if required. During some other season possibly a much smaller amount would have to be supplied by the dam to maintain the minimum flow but the rainfall this year has been about as small as it is reasonable to expect. Briefly: 400,000 H. P. is added to the minimum power of the St. Maurice.

While Shawinigan Falls has been mentioned as the criterion for the estimate of stream flow and consequently the calculation of power output, it must be remembered that every power station on the river benefits in the same proportion. It should be remembered also, and this point has not been made sufficiently prominent to the public, that there are probably as great power possibilities yet to be developed as are harnessed on this river and everyone that is established will derive the benefit of the dam. This is now called the Gouin dam in honor of the Premier of Quebec whose foresight was largely responsible for its erection, but which was originally named La Loutre after the name of the rapids at that point of the river.

The time will come when the Trans-Continental Railway will be electrified and the St. Maurice River will probably drive the trains running between Quebec and Montreal and points as far west, possibly, as Amos. The contribution of the enormous water storage reservoir behind the Gouin dam will then begin to be appreciated.

The Streams Commission Engineer has very comfortable offices and quarters and the camp, which is really a little village, has many comforts and conveniences unknown in villages much nearer civilization. It was surprising to find in the heart of the woods a water and sewerage system, bath tubs, electric lights, telephone and even a trolley. The writer is ashamed to record the number of fine trout which he consumed during his stay at the dam, but we would defy any reader to have stopped short of his capacity when confronted with the delicious meals prepared by the camp chef.

On Monday morning Mr Barnjum and the editor went up into the woods on the ridge back of the dam and measured a few of the trees and stumps to get an idea of the age and the rate of growth. We found a 14 in. and a 9½ in. tree each 140 years old and 13 in. tree 111 years old. A noticeable feature of these trees, which evidently were taken off but a few years ago, was that the rate of growth was fairly rapid and uniform for about 80 years but after that time the annual increment was very slight indeed. In fact, these trees added less than 2 in. in diameter in the last forty years. A measurement of some young growth showed that trees which came up in the shelter of old forest developed very slowly. For instance, a fir 17 years old was only 4 feet in height and a spruce 35 years old was only 6½ feet high and 1½ in. in diameter. The more rapid growth in the early years of the older trees however, will seem to indicate that with the application of proper forestry methods, the St. Maurice valley could be kept in a state of continual production. If however, fire is permitted repeatedly to burn up the young growth as soon as it gets a fair start, there will never again be commercial lumbering along this river or in fact anywhere else in this north country once the original forest is taken off and present methods leave the woods strewn with slash, blow downs and dead timber to invite the first match, cigarette butt, camp fire or lightning bolt to ignite and destroy a township or more.

The start for the return journey was made after lunch on Monday and the twenty mile trip with Capt. Rowell in his flivver was made very interesting by the shooting of several nice fat partridge. The captain's eagle eye spied the birds some distance ahead as they sat on the rails or walked the track and they had not got out of sight before the car was stopped and Mr. Mathis with his one good arm and 28 bore shot gun had blown their heads off. Four partridge with four shots by a one armed man, and that his left, we call pretty good shooting. The editor was especially pleased to be favored with the bag.

The trip down the river was pleasant and uneventful. The next morning at four, we took leave of our hospitable friends and returned to the routine work of getting out a weekly magazine.

In conclusion, if anybody has the notion that Canada's forests are illimitable, or not in every way deserving of minute care from now on, he will be converted to a different faith by a trip to what once was woods.

The Woods Trolley—If Henry could see this!

The Structure of Cereal Straws

By FRANCIS E. LLOYD, F.R.S.C. McGill University.

Continued from last issue.

COMPARISON OF THE VARIOUS STRAWS BASED UPON STRUCTURAL DIFFERENCES.

External Gross Character.

The four straws under examination may, if entire, be readily distinguished by their stature, thickness, and the shapes of the individual internodes and the minor but nevertheless diagnostic characters offered by the false nodes, by the shape of the upper part of the internode just below the nodes, the sub-nodal constrictions, and claws. The keys given below, as being the briefest methods of description and at the same time most easily usable, present the contrast of structure in summary form. It will be understood that such keys are useful only as descriptive of the four straws included, and would require modification and extension if other straws had to be considered (*). A possible qualification might be forced even by races within the species, and even by the age of the individual. Thus Carrier e.g. bases his classification of grain seedlings on the presence or absence of claws, finding them present in all the grains but oat. It was difficult to find evidence of claws in the sample of wheat straw supplied for this work, but other samples showed them to be present, but quite irregularly. Thus they may be present on one side only, or totally absent, or, when present, they may show much difference in size on the two sides of the leaf. Rye, in common with wheat, betrays a considerable amount of variation in this respect.

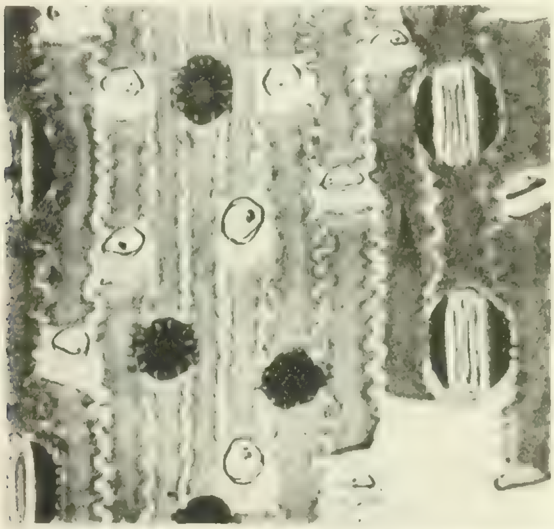


Figure 27.—Epidermis of wheat to show the crown cells. The dwarf cells are also in evidence by the black outlines, due to included air. The cells are somewhat separated from each other by maceration. ×310

The characters used in the keys are for the most part such as may be detected readily even if the straw is broken, and when the fragments are small. When pulped however, identification must rest upon minute anatomical characters which offer greater difficulties of choice and application. Such characters are the length of fibers, sizes of stomata, the presence or absence of trichomes ("comma cells," Weisner, 1865,) characters of epidermal walls, and the like.

Identification Keys Based Upon External Characters.

Interior face of leaf sheath smooth; ligule long (*ca.* 4 mm.); claws absent; false nodes usually much shorter than broad; terminal internode 2 or more mm. in diameter near tip—oat. Interior face of leaf sheath rough, more or less, with upwardly directed short, stiff trichomes (comma cells); ligules short (1 mm.) Upper part of terminal internode pubescent or hirsute, the internode tapering to slender dimensions (1 mm. diameter)—rye. Upper part of terminal internode smooth thick toward apex. Claws prominent, always present—barley. Claws sometimes absent, small or various in size—wheat.

The dimensions of the false nodes when wet and dry afford a means of identification of some value, though more difficult of application. The following tables are examples of such measurements.

Measurements (diameter and length) of false nodes of barley, oat, rye and wheat in swollen condition, in millimeters.

	Basal		Middle		Top	
	Diam.	Length	Diam.	Length	Diam	Length
Barley	5	3.5	4.8	4	4.2	5.4
	4.6	4	4.5	5.3	3.7	7
Oats	5.5	2.5	5.5	2.6	5.3	3.2
	4.6	2	4.5	2.7	4	2.6
			5.4	2.8	5	3.5
Rye	4.5	3	4.4	4	3.5	5.2
	4.5	2.5	4.4	4	3.6	4.5
	5.2	3.8	5	4.7	4	4.5
Wheat			4	2	4	4
			4.5	3.5	4.5	3.8

Measurements (diameter and length) of false nodes of barley, oat, rye and wheat, to the nearest half-millimeter, when dry.

	3rd		2nd.		1st	
	Diam.	Length	Diam.	Length	Diam.	Length
Barley	2.5	3	2.5	4	2	4.5
	2.5	2.5	2.5	3.5	2	4
			3.0	3.5	2.5	4.5
	2.0	2.5	2	3.5	2	4
			2	3.5	2	4.5
Oats			4	1.5	3	2
			4	2	3.5	2
			4	2	3.5	2
			4	2	3	2
			3.5	2	3	3.5
Rye	3	3.5	3	4	2	4
	3.5	2.5	3.5	3	2.5	3.5
	3	2	2.5	3	2	3.5
	4	3.5	3.5	4	3	4
	3.5	3	3	3.5	2.5	4
Wheat			3.5	3	3	3
			3.5	2.5	2.5	3.5
			[illegible]	2.5	2.5	3.5
			3	2.5	2	3
			3	[illegible]	2.5	3.5

(*) See the bulletin by Lyman Carrier, 1917.

COMPARATVE ANATOMICAL CHARACTERS OF STRAWS.

Comparison of Distribution and Characters of Tissues as Seen in Sections.

1 Transverse section of the terminal internode (figures 16-19). There is little that can be regarded as sufficiently characteristic in the structure as seen in transverse section to serve as diagnostic. Of two rather obvious points, that of size has already been made use of in one of the preceeding keys. It may be added here that the thickness of the wall of the terminal internode near the tip is equally characteristic, and is for the different straws as follows:

	Thickness of wall	Diameter of straw
Barley	1	6
Oat	1	8
Rye	1	3 4
Wheat	1	4

On this point therefore, rye and wheat may be distinguished from oat and barley.

The second point is found in the number of chlorenchyma spaces which may be counted in the total transverse section. Rye has by far the fewest, namely, about 18 to 20, while the other species have from 30 to 36, barley having 32, wheat 34 to 36, and oat 36 to 38. These numbers are approximately twice the numbers of bundles in the innermost series. The fact that the chlorenchyma spaces may be double instead of in pairs separated by a small bundle may make it necessary to regard a single one as two, or to rely rather on a count of the large bundles which lie free in the parenchyma. Thus, the stem in figure 4 has 37 bundles, which is, however, not a terminal internode.

A third feature is the character of the lining of the fistula formed by the deal parenchyma. It is thickest and pavement-like in the oat (figure 17), well defined in all but the wheat, in which it is loose and ill-defined in texture, not forming a smooth lining.

Summarizing these characters in the form of a key we have the following:—

A. Thickness of wall of fistula (terminal internode, near its apex) one-fourth to one-third the total diameter
   a) Collapsed pith cells forming a clear cut pavement; or
   b) Number of bundles in innermost series about 12 . . . . rye
   aa) Collapsed pith cells loose, not forming a pavement; or
   bb) Number of bundles in innermost series about 18 . . . . wheat
B. Thickness of wall of fistula one-sixth to one-eighth that of total diameter.
   a) Pavement formed by pith-cells thick; or
   b) Parenchyma cells large . . . . oat
   aa) Pavement formed by pith-cells thin; or
   bb) Parenchyma cells one-half the diameter of those in oat . . . . barley.

The amount and disposition of the fibers (mechanical tissue, bast) is correlated with the chlorenchyma, there being relatively more fibers toward the base of the (top) internode, and relatively fewer toward the apex. In relation, however, to the area of the transverse section the fibrous tissue is greater toward the apex, this being apparently correlated with the mechanical conditions associated with the reduced diameter. Concerning the character of the fibers we shall speak beyond.

2. Transverse section of basal internode. If anything, the lower internodes offer less to seize upon for purposes of identification than the terminal. Bearing in mind the difference of structure as between the upper and nether parts of the internode, the middle portion has been taken as a standard of comparison. Of the four straws, the oat stands out clearly on account of the small number of parenchyma cells, and of their large

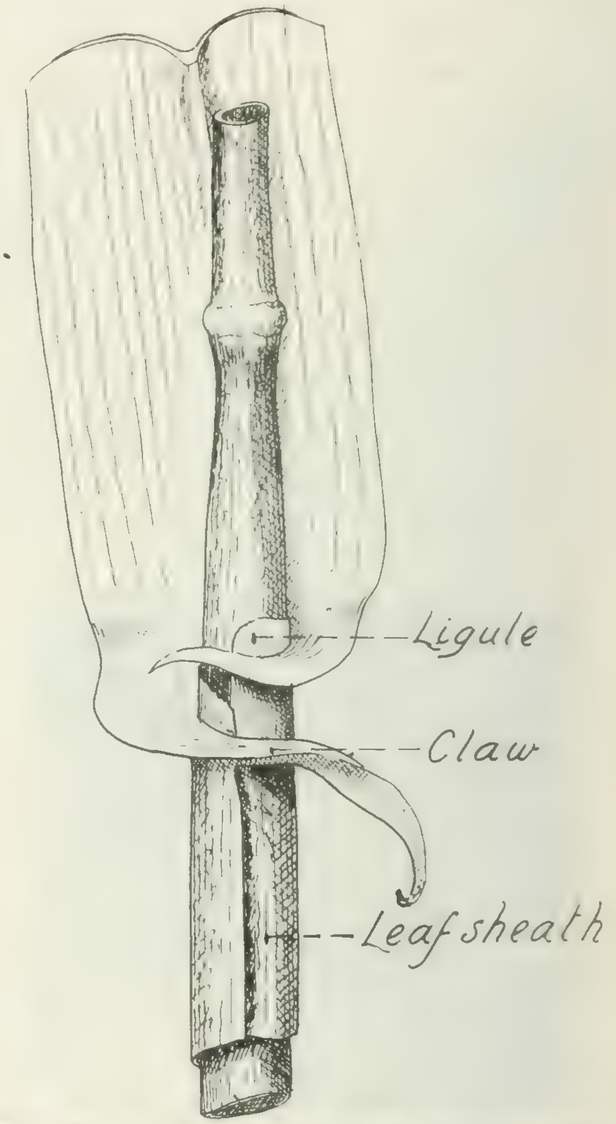


Figure 28. Barley. Juncture of the leaf sheath, [illegible] made to show the claws and ligule.

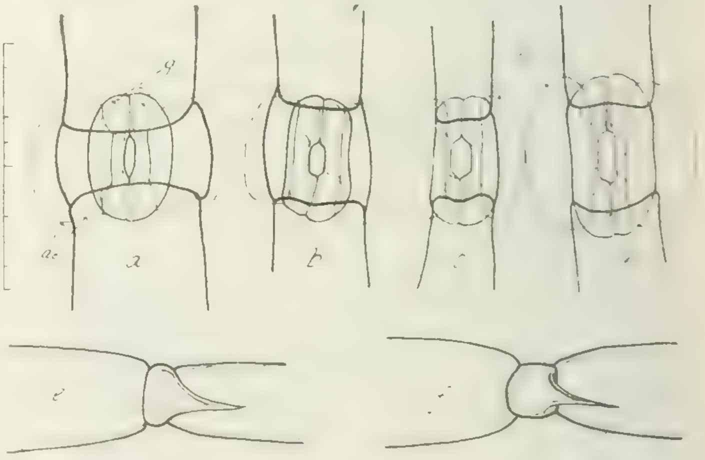


Figure 29. Stomata and trichomes (inner (upper) epidermis of the leaf sheath of (a) barley (b) oat (c) rye and (d) wheat; also the trichomes of (e) rye and (f) wheat. g., guard cells. ac., outline of accessory cells. Drawn to the accompanying scale.

size. As in the terminal internodes, the collapsed pith cells make a thick pavement lining the fistula. In the oat also there are only about 20 large bundles free from the fibre layer, while in the others the number is greater, from 24 (wheat, rye) to 28 (barley).

Comparison of the individual tissues and of their elements. Epidermis (figures 6-13). Of all the tissue systems, the epidermis lends itself most readily to identification, since it is more distinctive of the genus.

Wiesner's (1900) findings are of interest at this point. He says that the bast cells of the four cereal straws (here under consideration) are so similar as to afford no characters for certain differentiation, while the size and form of the epidermal cells are quite distinctive. Those in rye, wheat and oat he continues, have a pretty regular rectangular general outline. Those of rye have strongly sinuous limiting outline, while those of wheat are straight. Oat on the other hand has epidermal cells with a gently wavy outline. Those of barley are rhomboidal or trapezoidal in contour. The writer in view of the facts below presented feels that Wiesner's description is quite inadequate.

Fragments of the epidermis, or at least individual cells are easily found in paper pulp, and since they of all the elements show the least amount of distortion, their characters can be seized upon with corresponding readiness and certainty. Of the individual elements (cells) it is difficult or impossible to find those of stomata and the dwarf cells in bleached papers, since in these the treatment complete dissociates the cells in question, while their small size allows them to be washed away. In unbleached papers, on the other hand, fragments of epidermis sufficiently big to carry all the kinds of cells composing it can be found, thus permitting identification.

The epidermis of the outer surface of the leaf sheath differs from that of the stem in certain details, and, inasmuch as for constant length of straw there will be more leaf epidermis present in pulp, it is quite as important an element to be considered as the stem epidermis, if not more so. The leaf blades are in minor quantity and are almost negligible in this respect.

As has already been said above, the epidermis is not uniform in structure, but consists of alternate longitudinal zones; those roofing over the chlorenchyma spaces, and recognizable by the stomata (stomatal zones), and those underlaid by fibrous tissues, devoid of stomata (non-porous zones). The latter, except in wheat, do not afford readily differentiable characters. The component cells are straight-walled (except in the leaf of wheat) and narrow, roughly about one-half the transverse diameter of the cells of the stomatal zones. These alternate, in a longitudinal sense, with the minute dwarf cells, which are either single, or in pairs. In the former case the dwarf cell is from the point of view of morphology a trichome of small size. When two are present, the upper (distal) one is a trichome. In the wheat in addition to the dwarf cells, there is a peculiar cell, roughly circular (*ca* 30 microns in diameter) in outline *en face*, and round or quadrangular in the stem, which, on account of the large amount of unmodified cellulose present, take up stains (magenta, Bismarck Brown, safranin, etc.) more readily than the remaining epidermal cells, excepting only the accessory cells of the stomata. By their consequent darker staining reactions, they are more readily seen in suitably stained preparations, as seen in figures 9 and 13, and especially in figure 27. In the leaf they assume the form of trichomes.

On account of their shape I call these cells "*crown cells*." Since they are absent from the other grains which we are considering, the presence of crown cells definitely identifies wheat.

In barley wheat and rye, trichomes are present. They are especially developed on the terminal internode of rye, and, in fragments of epidermis, their bases are seen as large oval cells in the positions of dwarf cells. Smaller ones sometimes occur on the leaf sheath (outer surface) in wheat.

They are absent from the oat excepting only that they are present on the upper surface of the leaf-blade and its margins. Their form is such that the sharp claw-like end lies for the most part parallel with the leaf-surface and so the roughness produced is not marked. This permits their recognition with some certainty. In the epidermis of the stem and outer (lower or dorsal) surface of the leaf sheath, we note the following:

The cells (exclusive of stomata and dwarf cells) have much more strongly (1) wavy or sinuous longitudinal walls in the leaf-sheath. In the stem they are only slightly undulating, or, in oat, straight, or nearly so. Arranged in series based on waviness both in leaf-sheath and stem the four straws are as follows: Wheat=rye; barley; oat.

It is difficult to judge on this point as between wheat and rye, since the walls are thinner in the latter and so the waviness is masked. The waviness is most irregular in wheat and least so in oat, the four straws falling, as regards this feature, in the same order as the above.

The waviness and irregularity in the wheat are very characteristic, and enable one to identify it with considerable ease. The oat is equally distinctive by virtue of the relative or entire absence of undulations from the cell walls of the middle of the stomatal zones of the upper region of the leaf-sheath (3) the sinuosities increasing in amplitude toward the non-porous zones and toward the base of the sheath. When isolated, the straight walled cells are indistinguishable from the epidermal cells from the inner (upper) surface of the leaf-sheath and from the outer surface of the papery leaf margin, so that, unless leaf-fragments of sufficient size are available, positive evidence can be gained only from the sinuous cell-walls. The character of these sinuosities is well shown in figure 11, which however is from a part of the leaf sheath which does not show the straight cell walls, that is, approximately, the middle region.

Rye and barley can be distinguished readily enough from wheat or oat, but not easily as between themselves, if the character of the undulations is depended upon (figures 11, 13). They are however easily separable by the absence or presence of trichomes at least as far as the lower part of the leaf-sheath is concerned and by the character of their walls, which are much thicker generally in the wheat.

The character of the undulations is more difficult to judge when the cells are isolated, since the lateral processes of the cell, corresponding to the undulations but lying below the surface, are much more pronounced. It is therefore necessary to obtain a microscopic image of the outline of the upper face of the outer cell wall. (see figure 14) that namely to which the cuticle is applied.

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(1) That is as to depth, but not as to the number of undulations per unit of length.

(3) Wiesner's description of the epidermal cells of oat has already been cited. It is evident that he had regard only to the epidermis of the stem. The waviness of the walls of the leaf-sheath epidermis is so evident, and it is so certain that the leaf-sheath contributes largely to the fiber in paper that it is quite necessary to

have regard to the character of its epidermal cells.

An effort has been made to base distinctions upon the thickness of the epidermis cell walls, but this is difficult. The thickness varies with the level, the extreme thickness being found at the base (6 microns for oat), where the amount of fiber is also greatest, and the least thickness (2 microns for oat) just below the ligule. This character varies also with the maturity of the plant. In general however, the series seems to be the following in order of thickness of cell wall.

ITALY'S PULP AND PAPER IMPORTS.

From the Anglo-Italian Review for September, 1921.

Ever since 1919 paper intended for newspaper has been exempted from Italian import duty. The period of exemption has been lengthened from time to time and a recent law has again granted exemption up to the 1st December 1921.

Were it not for this exemption the import duty would be L. 12.00 per quintal.

In regard to the paper imports into Italy, the following details are worthy of study:

Imports in Metric Tons (2204.6 lb.) during	1913	1920	1921
Rags, chiefly from France, 2,158 T in 1920, Hungary 725 T, Switzerland 667 T, Tripoli 236 T, but only 23 tons from the United Kingdom	7,400	5,950	950
Pulp and Cellulose (dry weight chiefly from Sweden, 39,500 T in 1920, Norway 9,300 T, Austria 7,155 T, Czecho-Slovakia 3,600 T, whilst in 1921 Austria takes first place, 4,000 T in 3 months, followed by Sweden 3,400 T and Germany 3,200 T	95,950	70,000	12,600
Plain paper chiefly from Austria 3,000 T in 1920, Germany 3,000 T, Switzerland 1,200 T, Czecho Slovakia 1,000 T, United States 600 T, whilst for 3 months of 1921 Germany stands first with 3,600 T, Austria 1,600 T and the United States 420 T.	3,600	9,900	6,600

The points of interest to our merchants are the absence of Canada from this list of countries that sell pulp and cellulose to Italy and the great increase during 1921 of the Italian demand for manufactured paper. During the first quarter of 1921 Italy imported much less than one-quarter of the 1920 whole-year imports of the raw materials for paper, but she imported two thirds of the quantity of paper which she had imported during the preceding twelve months. The present would seem, therefore, to be a favorable moment for offering British pulp from Canada to the Italian paper makers. The local production of mechanical pulp (chiefly poplar) is only about 10,000 T short of the local requirements, but Italy is backward as regards the home production of cellulose.

The customs duty on pulp and paper, other than paper for the press, is, per quintal (220.4 lbs): Wet pulp, containing at least 50 per cent water, L. 1.00, dry pulp, L. 2.00, cellulose, L. 2.00. Paper, white or dyed in the pulp, and not sized: not ruled, L. 18.75, ruled, L. 22.75, envelopes L. 33.75. Paper, white or dyed in the pulp, sized, L. 42.00.

A point of interest to our own makers of high-class paper who use Tripoli esparto grass as their raw material, arises from the closure of the Government Special War Department for the supply of paper to the daily press. This department made a profit, which is being spent on setting up experimental esparto pulp machinery.

Imported during the Year 1920 and the First Quarter Of 1921 (Amounts in Metric Tons Except Where Otherwise Indicated)

Amounts Imported From	All Countries.	British Empire.
Rags except wool	6,900	152
Pulp, cellulose	82,907	x
Paper, not ruled	16,500	201
Paper colored, gilt painted	619	82
Wall Paper	561	105
Photographic Paper	500	134
Cardboard: Ordinary	13,534	269
Glazed	796	51
Fine	500	87
Prints, Lithographs, Show Cards	589	68
Paper and Cardboard Goods	414	38
Books	194	46

x The volume of trade with the British Empire is small, therefore figures are not published separately.

CORRESPONDENCE.

17th September, 1921.

Editor Pulp and Paper Magazine.
Gardenvale, Quebec.

Dear Sir, I was interested in the discussion of Long Prices in your Sept. 15th number, partly because I have had so little experience with anything that might be considered a short price.

An experience of my own came to mind when I saw something about printers making a profit on paper used in their work.

The last lot of letter heads, on one of which this letter is written, were billed to me at $18.20 a thousand.

When I recovered my breath I asked if there had been any mistake, and this is what came back,—

> "Replying to your enquiry regarding our charges for your recent order of letterheads would say that the cost of stock was $9.81 plus a 1 per cent tax. When you add to this the cost of printing the order of $4.00 we think our charge of $18.20 is quite fair."

Now his overhead was taken care of in the $4.00 because that was what he quoted me to print from die if I supplied the paper, so he made $4.30 on ordering and trimming the paper.

My paper cost me $14.20 and as it is 20 lb. stuff that was $1.42 a pound, which is I should say a very long price, pretty near the elastic limit.

Yours very truly
"The Short of It."

The new motion picture service of the American Paper and Pulp Association had its first try-out recently in Margaret, Ala., a small mining town. The purpose of the service is to distribute films on the paper industry.

A Contribution to the Study of Rosin Size.[*]

Translated by JESSIE E. MINOR, Emerson
Laboratory, Springfield, Mass.

The following notes are the result of several years of study of the subject of paper sizing both in the mill and in the laboratory. While the experimental results are very interesting, the data given is insufficient to establish or dispute the theories suggested. More experimental work is needed before the subject can receive discussion.

For the sizing of paper there is need of a rosin solution containing at least a part of the rosin in a free state. This may have been left free in the making of the soap or may be the result of the hydrolysis of the sodium resinate when the size is diluted to a milk. From the standpoint of colloidal chemistry, size milk may be considered as a fine suspension of free particles of rosin. Suspensions of this kind are very sensitive to the addition of electrolytes which change the suspension to a two phase system of precipitate and watery liquid, but the details of this process, with reference to rosin size, have not been studied.

In the following experiments pure rosin solutions were used instead of the usual size milk. While the conditions in the two cases are not exactly the same, yet conclusions obtained with the use of a solution of pure rosin may lead to an explanation of the phenomena associated with rosin size solutions.

The first point of interest is the effect of an aluminium sulphate solution upon a free rosin suspension, since this electrolyte and related salts are used exclusively in practice for the precipitation of size milk. In order to study this, the following experiments were carried out: The solutions used were chemically pure aluminium sulphate of definite concentration and a free rosin suspension made by dissolving pure colophony in alcohol and then pouring the solution in a thin stream from a pipette into distilled water. This solution was allowed to stand for 24 hours in order to give the larger particles time to settle. 20 cc portions of this rosin suspension were then put into large beakers and mixed with decreasing amounts of aluminium sulphate solution, in each case maintaining the same volume of liquid. For example, the first beaker contained 20 cc of rosin solution and 20 cc of aluminium sulphate solution, the second beaker contained the same amount of rosin but 10 cc of aluminium sulphate and 10 cc of distilled water, etc. The beakers were covered and allowed to stand for 2 hours at 20°C. From results shown in table I it is apparent that limiting values occur beyond which no precipitation occurs. The lower value is 0.08 millimols, the upper about 0.6 millimols of aluminium sulphate in one liter. In the zone which lies between the two limiting values, precipitation begins during 24 hours and is complete after 36 hours. On the other hand, in the flocculating zone whether upper or lower, precipitation occurs quickly and evenly.

This phenomenon is not limited to any special rosin but can be observed in widely different kinds. Mastic gum, which was studied by Neisser and Friedemann, acts similarly.

This phenomenon may be explained as follows: Free rosin suspension forms a negatively charged colloidal solution, but this charge is discharged by the addition of an electrolyte resulting in coagulation and precipitation. In the lower precipitation zone the charging or discharging of the disperse phase is brought about by the absorption of positively charged aluminium hydroxide which exists in the electrolyte solution as a result of hydrolytic splitting. If sufficient aluminium hydroxide is present, the rosin particles may be completely covered over with a layer of positive aluminium is a positive solution. If now more of the electrolyte is added so that the adsorption of sulphate ions occurs, coagulation again results and we hae the upper precipitation zone.

From these considerations it is apparent that the limiting value is that amount of electrolyte which just removes the charge from the particles in suspension.

Analyses of these precipitates show that for the upper zone both aluminium hydroxide and sulphates are present, but while the aluminium hydroxide content is measurable, amount to from 0.008 to 0.012 per cent, that of sulphate is only a trace. These precipitates are different in appearance from those obtained from size milk, the latter being much more granular in structure.

Table II.

Concentration Millimols of $Al_2(SO_4)_3$ per liter.	Behavior of the Rosin in the Suspension.	Remarks.
20.90	Complete prec.	Upper prec. zone.
10.45	" "	
5.32	" "	
2.61	" "	
1.31	Slight "	
0.653	Very slight "	
0.327	No "	Upper non-prec. zone.
0.163	" "	
0.082	Complete "	Lower prec. zone.
0.041	Slight "	
0.020	No "	Lower non-prec. zone.
0.010	" "	
0.005	" "	

Calculating from these solutions, in order to effect precipitation in the upper zone when using pure rosin solution, there would be needed for 100 grams of pulp 2 grams of rosin and 0.66 grams of alum which is more alum than is required for a rosin milk with 40 per cent free rosin. With the accepted acid number of 11.8, only 0.19 grams of alum are required for the precipitation of 2 grams of rosin.

There is in the literature considerable data as to the effect of other electrolytes upon rosin solution and this would be interesting for comparison. From the valence rule, which apparently does not apply in some cases at all and is only an approximation in the remaining cases, the ability of an ion to precipitate a colloid in suspension depends upon its valence. The larger the valence, the less of it is needed to precipitate the colloid. For a negative colloid, it is the valence of the cation, for a positive colloid that of the anion which is determinative. Since the above mentioned rosin suspension carries only negative charges, its behaviour can easily be predicted.

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[*] The original of this article, by Dr. Rudolf Sieber, Kramsfors, appeared in the April, 1921, number of Zellstoff u. Papier.

In table II are given the observed limits for different electrolytes. The experiments were carried out in the same way as were those with aluminium sulphate described above.

Table I.

Electrolyte.	Precipitation value in millimols per liter.	Remarks.
NaCl	1100	
KCl	1200	
$CaCl_2$	27	
$CaSO_4$	10	Incomplete.
$BaCl_2$	22	
$MgSO_4$	15	
$FeCl_3$	0.04	
$Al_2(SO_4)_3$	0.04	Lower zone.

From table II it is apparent that the trivalent ions (Fe, Al,) are stronger than the monovalent ones.

In table III are recorded the results of the varying concentrations of ferric chloride upon rosin size under the same conditions as were used for the work recorded in table I.

Table III.

Concentration Millimols of $FeCl_3$ per liter	Behavious of the Rosin in the Suspension.	Remarks.
50.00	Complete prec.	Upper prec. zone.
25.00	Almost complete prec.	
12.50	No prec.	Upper non-prec. zone.
6.25	" "	
3.12	" "	
1.56	" "	
0.780	" "	
0.390	" "	
0.195	" "	
0.098	Very little prec.	Lower prec. zone.
0.044	Complete prec.	
0.022	No prec.	Lower non-prec. zone.
0.011	" "	

The differences between the series of Tables I and II are not great and both salts approximately follow the valence rule. The precipitation in the lower zone is brought about by the positive hydroxide, which explains why the lower limiting value occurs at about equivalent concentrations, i.e., 0.041 millimols of $Al_2(SO_4)_3$ and 0.044 millimols of $FeCl_3$. For precipitation in the upper zone it is the anion which is effective and the divalent sulphate ion is stronger than the monovalent chloride ion, the former reaching its limiting value at 1.03 millimols, the latter at 25.00 millimols.

The rate of precipitation increases rapidly with the temperature, as can he seen from Table IV.

Table IV.

Electrolyte	Time in Minutes for Complete Precipitation at 18°C	28°C	35°C	40°C
NaCl	120	40	30	30
$MgSO_4$	120	30	20	20
$CaSO_4$	190	40	30	30
$Al_2(SO_4)_3$	100	20	20	15
$FeCl_3$	90	20	20	15
Average time required	124	30	24	22

The greatest change in the velocity seems to occur between 20° and 35°C. An examination of the precipitate in each case showed that both cations and anions were present.

A few experiments were carried out to determine the effect of the addition of several electrolytes at the same time. The effect of the simultaneous addition of several electrolytes to the same suspension was found to be not additive and the total effect is less than the sum of the separate effects. It is interesting to note that hard water can cause coagulation without the amount of any one salt overreaching the limiting value. From the above Table it may be noted that calcium salts cause precipitation at a concentration of approximately 25 millimols to a liter and the corresponding value for magnesium salts is about 15 millimols per liter. These figures would correspond to a German hardness of about 140 or 84° (1° of German hardness is due to the presence of gram or 17.8 millimols of CaO in 100 liters of water.) It is, therefore, apparent that a pure rosin suspension is stable to a very hard water.

In conclusion it might be said that the use of a free rosin suspension, with reference to the amount of alum required for precipitation is not more favorable than is the rosin size which is now used, but that with reference to precipitation through hardness of water it would be very much safer.

GENERAL CHEMICALS.

Current Wholesale Prices in New York Market. Week of October 5, 1921.

		Carlots	Less Carlots
ACID Acetic 56%	100 lbs.	5.50-5.75	6.00-6.50
" Glacial 99½% carboys	100 lbs.	10.50-11.00	11.25-10.50
" Hydrochloric	100 lbs.	1.25-1.50	1.60-1.75
" Sulphuric, 66% carboys	ton	....-....	....-....
" Sulphuric 66% drums	ton	21.00-22.00	22.50-23.00
ALCOHOL, Ethyl	gal.	....-....	4.65-4.90
" denatured 188 proof	gal.	....-....	.35-.36
ALUMINIUM Sulphate, commerc.	lb.	.02-.02¼	.02¼-.02¾
" sulphate, iron free	lb.	.03-.03¼	.03½-.04
AMMONIUM Chloride, granular, white salamoniac, normal)	lb.	.06-.06½	.06¾-.07
AMMONIUM Chloride, granular (gray salamoniac)	lb.	.06¾-.07	.07¼-.08
BARIUM SULPHATE (precip.) (blanc fixe)	lb.	.04-.04¼	.04½-[illegible]
BLEACHING POWDER (see (Calc. hypochlorite)			
CALCIUM hypochlorite (Bleaching Powder)	100 lbs.	2.75-2.80	2.90-3.50
CAUSTIC SODA (see Sodium hydroxide)			
CHLORINE, gas, liquid cylinders	100 lbs.	.08-.09	.09½-.10
GLYCERINE, C.P., drums extra	lb.	....-....	.14½-.15
LITHARGE	lb.	.07½-.08	.08¼-.09
SALT cake	ton	....-....	20.00-25.00
SODA ASH, light	100 lbs.	2.10-2.15	2.20-2.50
" " dense	100 lbs.	2.35-2.40	2.45-2.70
SODIUM Borate (Borax)	lb.	.05½-.06	.06½-.07
" Carbonate (Sal Soda)	100 lbs.	1.90-2.00	2.10-2.40
" hydroxide (Caustic Soda)	"	4.00-4.10	4.15-4.75
SULPHUR, Crude	ton	18.00-20.00	....-
" Dioxide liquid, cylinders extra)	lb.	.08-.08½	.09-.10

In the New York Chemical market several of those close to the pulse of trading believe that the last quarter will prove to be the brightest of the year and that the improvement in business will be gradual until after New Year's, when it will be brought to its former normal state.

There has been very little heard of imported soda ash during the past few weeks. A stiffening market in cyanide of soda, prussiate of soda and soda ash has been the principal factor in the week's activities. There has been a marked shortage of supplies on the two latter items, especially from importers.

There have been reductions made by manufacturers of sulphuric and nitric acids.

British Trade News

Special from our London Correspondent.

London, Sept. 27th, 1921.

"Shocking!" This simple word — though with a dreadful meaning — sums up the state of trade in paper and pulp circles in the United Kingdom. People say there is a good outlook at times and things cannot last as they are going at present; but the fact remains business is in a "topsy turvy" condition and the rates of exchange, amongst other elements, are blamed for trade's discord. This is not new history; it is old. As far back as April 1st, Mr. Stanley Cousins, who wrote a sensible and business-like letter to the London "Times", warned the Government and the paper makers that depreciated currencies were responsible and would be responsible for bad trade unemployment, and cheap dumped goods in England, and it is only today the Government in "tackling" the unemployed question have laid the root of all evils on the predictions of Mr. Cousins. Readers of the "Pulp and Paper Magazine" will recollect that I gave considerable attention to the dictum laid down by Mr. Cousins in April and one may ask where are his opponents to-day, who at the time told him, practically, that he was talking nonsense. Depreciated currencies undoubtedly prevail. British pulp and paper are down in exports and imports, unemployment is startling and now we have set up a committee under the Safe-Guarding Industries Act ("Key" industries Act) before which papermakers will have the opportunity of applying for protection as advocated by Mr. Cousins in April last. The more one looks into the present economic and industrial position the greater become the problems. Therefore, I have selected the name of Stanley Cousins as a theme, because, as far back as March last he predicted what was to be expected. We are now in the midst of the trouble and the only recompense is to fly to the Board of Trade and see what their figures show as a barometer of trade past and present.

The Pulp Imports For August.

The latest figures are for August. All kinds of pulp was imported to the extent of 101,689 tons, compared with 55,971 tons in July—due largely to large shipments from Sweden—but the figures for the 8 months, January to August, are poor reading as they show only 336,252 tons compared with 742,324 tons for the same period in 1920—less than one half. These returns tell a story; they relate the facts that the British mills are not making their full supplies of papers and that "all is not well" with them in this trying post-war period. Turning to the countries of supply an eight months comparison is interesting for 1921 and 1920:

Groundwood: From Sweden, 5,138 tons (60,824 tons in 1920); Norway, 120,305 tons, (223,248 tons); Canada, 58,560 tons, (47,193 tons); other places, 6,342 tons (12,489 tons)—a total of 190,345 tons, as against 343,754 tons in 1920. The increase in the Dominion figures should be noted and, if possible, maintained.

Unbleached Chemical (Dry): From Finland, 3,564 tons, (30,915 tons in 1920); Sweden, 91,955 tons (220,288 tons); Norway, 26,416 tons (67,329 tons); Germany, 4,604 tons (4,200 tons); other places, 6,843 tons (26,606 tons)—a total of 133,382 tons as against 349,338 tons in 1920.

Bleached Chemical (Dry): From Finland, 51 tons (nil in 1920); Sweden, 1,190 tons (2,919 tons); Norway, 6,967 tons (11,464 tons); Germany, 140 tons (505 tons); other places, 895 tons (5,185 tons)—a total of 9,243 tons as against 20,073 tons in 1920.

Taking all raw materials into account, rags, esparto and pulp, the total for the eight months reached 391,664 tons, as against 879,061 tons for the same period in 1920. This falling-off is a very serious matter and is indicative of the trade passing.

Exports of Papers.

The exports of paper, boards, bags, playing cards, etc., for August are below those of July—a month that was hampered by the coal crisis. August figures are 84,957 cwts (932,180 cwts for the eight months as against 1,377,821 cwts in 1920) and for July 94,616. The countries exported to during January to August were as follows:

Printings: To France, 5,855 cwts (58,594 cwts in 1920); U.S.A., 5,496 cwts (4,456 cwts); other foreign places, 88,508 cwts (170,933 cwts); South Africa, 51,005 cwts, (40,550 cwts); India, 67,312 cwts (154,824 cwts); Straits Settlements, 7,080 cwts (8,002 cwts); Ceylon, 9,983 cwts (13,146 cwts); Australia 194,141 cwts, (60,331 cwts); New Zealand 32,470 cwts (19,212 cwts); Canada 1,855 cwts (1,119 cwts); other British Possessions 23,705 cwts (36,883 cwts). Total 487,410 cwts, as against 568,030 cwts in 1920. The increased supplies to Canada should be noted.

Writing paper: To France, 1,312 cwts (17,752 cwts in 1920); U.S.A. 591 cwts (766 cwts); other foreign places 16,158 cwts (25,908 cwts); South Africa, 5,159 cwts (4,909 cwts); India, 20,508 cwts (40,194 cwts); Straits Settlements 2,160 cwts (3,391 cwts); Ceylon, 1,086 cwts (2,546 cwts); Australia 22,804 cwts (25,476 cwts); New Zealand 10,293 cwts (7,330 cwts); Canada 894 cwts (411 cwts) other British possessions, 6,015 cwts (7,675 cwts). A total of 86,980 cwts as against 136,358 cwts in 1920.

In August packing and wrapping paper was shipped to the extent of 10,280 cwts and in July 11,243 cwts. Tissues are down to the lowest ebb.

Imports of Paper.

The imports of paper [illegible] compared with 522,724 cwts in July. For the eight months they are about one-third those of 1920. The principal imports are for the eight months:—

Printing paper: From Sweden, 362,486 cwts (321,985 for 1920); Norway, 156,437 cwts (446,066 cwts); Germany, 40,545 cwts, (84,505 cwts); Belgium 52,506 cwts (11,880 cwts); U.S.A. 5,064 cwts (54,504 cwts); Canada, 5,203 cwts (130,126 cwts); Newfoundland, 410,150 cwts (629,305 cwts); other places, 690,284 cwts (557,384 cwts). A total of 1,722,675 cwts, as against 2,235,645 cwts, in 1920.

Packings and Wrappings: From Finland 104,920 cwts (340,440 cwts in 1920); Sweden, 300,400 tons (1,502,000 cwts); Norway 145,062 cwts (732,343 cwts); Germany, 91,661 cwts (151,500 cwts); Belgium, 49,726 cwts (68,072 cwts); Canada, 10,863 cwts (93,270 cwts); other places 85,517 cwts (177,332 cwts). A total of 788,149 cwts as against 3,065,159 cwts in 1920.

The imports from Newfoundland show an increase over July. Packing and Wrapping papers from Canada also increased above July.

Judging by the imports they are more healthy looking than the exports and the supplies from Germany and Finland increased during August.

Paper Mills Close.

A notice has been issued stating that the paper mills at St. Paul's Cray, in Kent—close to London—have closed for an indefinite period. Arrangements have been made to pay the [illegible] premises. Depression in trade is attributable for the [illegible]

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Estimation of Cellulose in Wood. J. Ind. & Eng. Chem., xiii (April 1921). Johnson asserts that Dore's statement to the effect that "all processes involving preliminary hydrolysis result in a diminished yield of cellulose as well as total cellulose processes" (**J. Ind. & Eng. Chem.**, xii, 264, 1920), and Mahood's statement to the effect that "modification of the Cross and Bevan method proposed by Johnsen and Hovey appears to be of doubtful value since the cellulose, as well as the hemicelluloses and furfural-yielding constituents, are attacked" (**J. Ind. & Eng. Chem.**, xii, 873, 1920), are not backed by convincing experimental data, are based upon insufficiently analytical data and upon statements which are misleading and partly incorrect. Mahood retorts that "Johnson offers no new experimental data in support of this rather sweeping statement," and proceeds to prove that his results and conclusions are in agreement with those of most other investigators with the exception of Sieber and Walter and of Johnsen and Hovey. Dore maintains his original contention that "all processes (for the determination of cellulose in woods) involving preliminary hydrolysis result in a diminished yield of alpha-cellulose as well as total cellulose," that the total cellulose and alpha-cellulose are destroyer in the same proportion, that at most only a trifling reduction in furfural yield of the cellulose obtained is accomplished by the Johnsen and Hovey method, and that the method is unsuitable for scientific investigations on the chemical nature of woods or other cellulosic materials.—A.P.-C.

A-3. Phragmites Reed for Pulp. Cellulosechemie, i, 7 (Nov. 12, 1920), 8 (Dec. 10, 1920), 9 (Dec. 24, 1920); **Paper**, xxviii, 1 (March 9, 1921), 2 (March 16, 1921), 3 (March 23, 1921). Abridged translation by CLARENCE JAY WEST. Detailed report of a complete laboratory scale and semi-commercial scale study of the use of reed for the manufacture of paper pulp. The soda process of cooking was used, and the pulp could be bleached to a good white; but the process is as yet too complicated for practical purposes. Handmade sheets prepared from the pulp indicated a satisfactory strength. Further investigations are under way relating to the botanical properties and it is hoped to systematically solve the many problems which have arisen during the course of the present work.—A.P.-C.

B-2. Conservation of Timber in British Columbia. R. W. HIBBERSON. **Pulp and Paper**, xix, 325-7 (March 24, 1921). An analysis of the timber supply of B.C., showing the danger of its exhaustion in a relatively early future, and of the urgent necessity of conservation and of adopting less wasteful methods of logging. —A.P.-C.

B-2. Planting for Pulp and Lumber. Pulp and Paper, xix, 193 (Feb. 17, 1921). Brief description of the planting of loblolly oldfield, and longleaf pines seed by the Great Southern Lumber Company on a 2,800 acre tract of cutover land.—A. P.-C.

B-9. Tax or Embargo on Canadian Pulpwood. FRANK J. D. BARNJUM. **Pulp and Paper**, xix (March 3, 1921). A "partial picture of destruction" wrought by the budworm and fires in Quebec and New Brunswick, with a discussion of the resulting imminent shortage of pulpwood to show the necessity of the government's putting a heavy export tax or embargo on fee land wood.—A. P. C.

B-0. Canadian Woodlands Section. Pulp and Paper, xix, 209-14 (Feb. 24, 1921). An account of the meeting held in Montreal, January 19, 1921, including address by O. M. Porter, representative of the American Woodlands Section, and papers by G. H. Anson on the organization of a woods experiment station, and by G. C. Piché (chief forester of the Province of Quebec) on the establishment of a forest rangers' school.—A. P.-C.

C-7. Thorne Barking System. Pulp and Paper, xix, 174-6 (Feb. 10, 1921). The barker consists essentially of three trough-shaped pockets made of steel plate. In the bottom of the pockets are slots through which the wings of the double-ended cams act on the logs to give them a rolling and rubbing action on each other, which effectively removes the bark. A heavy spray of water is played on the logs in the pockets, which washes the loose bark out of the machine through the cam slots into troughs below which carry it away. By feeding at the normal capacity of the machine the percentage of overbarked logs is negligible, and those which are discharged before being fully barked are dropped through a gap in the conveyer carrying them from the barkers and returned for another passage through the machine. The machine was developed with the following ends in view, (1) to eliminate as far as possible manual handling of the logs from the time they are placed on the haul-up until they are delivered to the chippers; (2) to abolish slashing and avoid the needless loss in sawdust; (3) to bark the logs clean without loss of pulpwood and at the same time avoid brooming the ends; (4) to stock-pile the logs in such a way that the maximum drying effect could be obtained. A feature of considerable importance is the exceptionally low maintenance cost on the machine. (This system is covered by Can. patent No. 201,846, July 13, 1920. Abs.)—A.P.-C.

E-2. Alcohol and Fuel from Sulphite Waste Liquor. N. E. CLEMENTSON, representative in Canada and the United States for A. B. Ethyl, Stockholm, Sweden. **Pulp and Paper**, xix, 317-22 (March 24, 1921). Description of the new methods of the Ethyl company for the recovery of alcohol and solid fuel from waste sulphite liquors, of the extent to which the process is used in Europe and America, and of the uses to which the alcohol can be put. Comparative analytical data are given to show that the quality of sulphite spirits is equal to that of grain or potato alcohol. The cost of production in a 70-ton sulphite mill would be 21.4 cents per gallon of 95 per cent alcohol and $5.13 for an amount of sulphite "coal" having a heating value equal to one ton of the best steam coal (6,500 kg. Cal.).—A.P.-C.

E-4. Calcium Analysis of Fresh Sulfite Liquors. RUDOLPH SIEBER. **Zellstoffchemische Abhandlungen**, i, 7 (June 15, 1920); **Paper**, xxviii, 3 (March 23, 1921). Translation by Clarence Jay West. The results of a comparative investigation of the well-known methods of analysis of the sulphite liquor and the Sander's method as used by Dieckman are given. Sander's method is briefly as follows: The original solution is diluted tenfold and 10 Cc of the diluted solution are titrated in the usual manner with tenth normal iodine and starch to blue color; then 5 Cc of 3 percent potassium iodate (KIO_3) solution (an excess must be present) is added, and the iodine which is liberated is titrated with tenth normal thiosulphate solution. The method has proven entirely suitable for practical use and will give correct values for the lime content of the liquors. It appears to be independent of those factors which influence the results obtained by Winkler's and Hohn's methods, and it is believed the method will prove suitable for general introduction in the industry.—A. P.-C.

H-5. Liquid Chrorine for Bleaching. L. N. GOEBEL, **Paper,** xxvii, 2 (March 16, 1921). Description of the containers used for the transportation of liquid chlorine and of the equipment used for the preparation of bleaching solutions from liquid chlorine.—A. P.-C.

H-0. Electrolytic Bleach in India. R. SITARAMA RAO. **Pulp and Paper,** 276 (March 10, 1921). Brief analysis of the possibilities of making electrolytic bleach in various parts of India.—A.P.-C.

K-10. Chemical Reactions in Sizing Paper. W. E. BYRON BAKER. **Pulp and Paper,** xix, 215-6 (Feb. 24, 1921). See **Pulp and Paper,** xix, K-10 (April 7, 1921).—A. P.-C.

K-12. Electrical Association Discusses Paper Machine Drive. Pulp and Paper, xix, 247-8 (March 3, 1921). Brief outline of paper by F. G. Warburton on the Harland Speed Inter-Lock as applied to paper machine (Cf. **Pulp and Paper,** xix, 59-64, Jan. 2, 1921) at the meeting of the St. Maurice Valley branch of the Canadian Electrical Association, Feb. 23, 1921, and of the ensuing discussion.—A.P.-C.

K-14. Accessory for Newsprint Rewinders and Calenders. E. MARGUET. Papeterie, xlii, 691-3 (Aug. 10, 1920); **Paper;** xxviii, 2 (March 16, 1921). Translation by A. Papineau-Couture.—A.P.-C.

K-0. Papers used in China. J. W. ROSS, Canadian Trade Commissioner. **Paper,** xxviii, 3 (March 23, 1921). Brief discription of the various kinds of papers required by the Chinese trade. A. P.-C.

K-0. Cotton Linters for Papermaking. H. A. LINDENBERG. **Paper,** xxviii, 2 (March 16, 1921). Outline of the future outlook for cotton linters in the paper manufacturing field, with special reference to their utilization for the manufacture of bond papers, roofing felt, and fiber board.—A.P.-C.

K-0. Paper Standardization. Paper, xxviii (March 9, 1921). Discussion emphasizing the need of standardization of sizes in the manufacture of paper. - A.P.-C.

K-0. Paper Standardization from Printer's Standpoint. H. J. WERNER, **American Printer** (Feb. 1921); **Paper,** xxviii, 2 (March 16, 1921). Reasons are given in favor of the following sizes: 19 x 27 for writings, bonds, etc.; 22.5 x 32 for writings, bonds, cardboards, etc.; 27 x 38 for book papers and double size writings; 38 x 54 for double size book papers; 45 x 64 for double size book paper; and of the gradual elimination of the undesirable sizes so as to cause the fewest manufacturing changes.—A.P.-C.

M-4. Belt Transmission for Paper Machines. VINCENT HAZARD, **Paper,** xxviii, 1 (March 9, 1912). A description of the power transmission features of the fourdrinier book machine illustrated in **Paper,** for November 10, 1921.—A. P.-C.

M-0. Laboratory Thermometers. W. D. COLLINS, **J. Ind. & Eng. Chem.,** xiii, 240-1 (March 1921). Specifications proposed by the Committee on Guaranteed Reagents and Standard Apparatus of the American Chemical Society for three standard thermometers (20° to 150° Cent. in 1° intervals; —10° to 360° Cent. in 1° intervals; —5° to 105° Cent. in 0.2° intervals) are given, together with a few comments on the reasons which prompted the choice of these thermometers as standard apparatus and on a few of the details of the specificatins.—A. P.-C.

M-0. R-13. Canadian Mechanical Standards, Paper xxvii, 26 (March 2, 1921). Report of the Committee on Mechanical Standards of the Technical Section of the Canadian Pulp and Paper Association, presented at the annual meeting at Montreal, January 19-20 1921..—A.P.-C.

N-5. Safe Storage of Coal. H. H. STOEK. **Paper,** xxviii, 3 (March 23, 1921). Hints on the proper methods of storing coal as given in the U.S. Bur. of Mines Technical Paper 235.—A.P.-C.

R-5. Reasons for a Cost System. T. J. BURKE. **Paper,** xxvii, 26 (March 2, 1921). The two main reasons for which a cost system should be installed are (1) to ascertain true manufacturing costs to serve as a basis for fixing selling prices; and (2) to eliminate waste by finding where it occurs.—A. P.-C.

O-3. Water Purification by Continuous Blow-off. G. PARIS. **Chimie et Industrie,** iv, (December, 1920); **Pulp and Paper,** xix (April 7, 1921). Description of the continuous blow-off method of boiler water purification and of its merits and advantages over other processes. The method consists essentially in allowing a certain proportion of the water in the boiler to blow off into a steam separator. The separated steam is made to bubble up through the raw make up water which has been mixed with sufficient soda ash to precipitate the noncarbonate-incrusting solids in the water, while the separated blow-off water travels slowly enough to allow the sludge to settle out, and then mixes with the raw water which also travels slowly enough to allow the precipitated incrusting solids to separate out. The principal advantages are low consumption of purifying chemical, high temperature for the feed water, and small and compact equipment which can easily be made practically self-regulating —A. P.-C.

R-1. Japanese Pulp and Paper Industry. Pulp and Paper Association and the Technical Section of the C P status of the Japanese pulp and paper industry and of some of the contemplated developments, more particularly of greater utilization of the forest resources of Manchuria and Korea.—A.P.-C.

R-11. Use of Microscope in Pulp and Paper Mill. I. L. GARTLAND, **Paper,** xxvii, 26 (March 2, 1921); **Pulp and Paper,** xix (March 31 and April 7, 1921). General description of the construction and uses of the compound microscope (lenses, accessories, types of instruments, etc.), followed by a few comments by H. N. Lee, Hammermill Paper Company, Erie, Pa., on specific uses of the microscope in the pulp and paper industry.—A. P.-C.

UNITED STATES NOTES

A great future for the lumber and allied industries in the Philippine Islands is predicted by W. Cameron Forbes, former Governor-General of the Islands, and General Leonard Wood, the new Governor-General. General Wood, following a recent tour of the archipelago, stated that there is enough timber in the Philippine Islands to take care of most of the lumber and wood using industries of the Far East. He said that nearly 230,000,000 feet of lumber was cut in 1920, of which in the neighborhood of 15,000,000 was exported. Gen. Wood favors the immediate initiation of wise forestry measures so as to assure replacement of trees cut. The Philippine forests, he pointed out, are full of the most valuable woods, and there is a possibility of great development in the production of rubber, camphor, etc., also an enormous amount of other forest and jungle products. A. F. Fischer, director of forestry of the Philippines estimates there are 72,224 square miles of standing timber in the islands, and that on this area the stand of timber is 200,000,000,000 board feet. This timber, which is owned by the government, is estimated to be worth $400,000,000.

The Hummel-Ross Fibre Corporation, Hopewell, Va., manufacturers of Kraft pulp and paper, announce that Walter Clifford has been engaged for the place of general superintendent of their plant. Mr. Clifford resigned as head of the sulphite department for the Champion Fibre Company at Canton, N.C., to go with the Hummel-Ross company. During the two and a half years he served the Champion Company, Mr. Clifford rebuilt the sulphite mill from 25 tons per day to a daily capacity of 75 tons of bleached sulphite pulp.

Despite the efforts of a huge force of fighters, flames from a forest fire near Los Angeles, California, last Saturday swept into San Francisquito canyon and threatened to destroy much property in that section of the mountains. The most dangerous of several fires near Santa Barbara were reported under control after they had burned since early in the week. Fires that caused considerable damage were raging in several localities in Colorado toward the early part of this week and, according to latest reports, are not yet under control.

The ambitious forest acquirement project planned in the main by Gifford Pinchot, Pennsylvania State Forester, was halted, and probably side-tracked for at least four years, when Pennsylvania voters rejected recently to the proposal for a convention to revise the State constitution. The convention, if one had been held, would have considered the authorization of a state bond issue of $25,000,000, the money to be used for the acquirement of denuded lands by the commonwealth for reforestation purposes. This proposition might have been rejected if other issues had not been involved in the calling of the constitutional convention, as it was apparent that sentiment in favor of the forest bond issue was rather widespread. Authorization of the bonds must now be sought through amendment to the old constitution, a time-consuming business.

For some time it has been a rather open secret that Forester Pinchot contemplates resigning his state office in Pennsylvania at no very distant date and concentrating his energies on national conservation work, which he had to suspend to a large extent when Governor Sproul persuaded him to give his services to the commonwealth. He recently closed his private offices in Philadelphia and opened quarters in Washington. When he retires as state forester he will leave a department thoroughly reorganized, in good running order, with a definite program of work and manned by competent people.

Of approximately 6,000,000 acres of land in Pennsylvania suitable only for the growing of timber, the state now holds slightly more than 1,000,000. Another million acres at the headwaters of the Alleghany river in the northwestern part of the state eventually will be taken over by the United States government for a national forest, the creation of which has been authorized. This leaves 4,000,000 acres which the state may take into its forest system still to be acquired.

The Bag and Textile Products Corporation was incorporated at Springfield, Ill., recently with a capital stock of $50,000. The company will engage in the manufacture and jobbing of paper and textile specialties, bags, etc., Company offices have been opened at 68 S. Dearborn street, Chicago. The incorporators are: James C. Mastin, M. M. Foehringer and B. Vrooman.

The amount of envelopes used yearly in advertising is staggering, according to officials of the Orgler Envelope Company, New York City, who put the number at several billions. The efficacy of the envelope as an advertising medium has been fully demonstrated and septics to zebra hides. The folding envelope containing a printed story on the inside is a particular favorite and combines economy with efficiency.

In a current number of "The Nation's Business" is contained an interesting article bearing on paper made from grass and several unheard of raw materials for pulp. It recounts the endeavors of the Imperial Institute of Great Britain, which has had more or less success in paper making from grasses and trees indigenous to Africa and India. More than thirty plants on which thousands are used to sell every commodity from antiexperiments have been made in the last eight years are listed in a recent publication of the Institute, says "Nation's Business." Rice straw and husks, linseed stalks, sunflower stems, these are familiar sounding, and baobab and bamboo, are not entirely novel, but what of mugugyboya bark or tambookie grass? Not much of mugugyboya, but of tambookie we are told that "it is well adapted for paper making and in normal times the crude material would be worth about $20 a ton in the United Kingdom." Our grocer born in Greece or Italy may yet wrap our tea grown in China in paper made from grass grown in South Africa.

C. F. Dutcher, who for many years has been the executive head of the Interstate Tablet Company, Chicago, has sold out his active interest in the firm. Mr. Dutcher was the founder of the company, and while he will no longer be interested financially, he will continue in its employ as general manager.

PULP AND PAPER NEWS

The Dominion general election will, it has now been definitely decided, take place on the 6th instant. This will give time for an unusually long electoral campaign, in the course of which it should be possible for the issues to be put before the electorate both extensively and intelligently by the spokesmen of the three parties that are contending for power. The position of the three respective parties on the vital questions of the hour will be impartially summarized in an early issue of the Pulp and Paper Magazine. Meanwhile, it is of direct interest to the trade to learn that the electoral campaign, besides being unusually lengthy, will be on an exceptionally elaborate scale. Posters, pamphlets, newspaper advertising, augmented newspaper circulation—all will make an increased, and assuredly a welcome, demand on the products of the industry.

While touching on matters political, mention should not be omitted of the action that has been taken by the Hon. H. H. Stevens, the new Minister of Trade and Commerce, in connection with the detrimental effect on the newsprint export branch of the Canadian paper industry by the recent establishment by the Australian Government of a duty of some $15 a ton on newsprint paper entering the Australian Commonwealth from all other countries than Great Britain. Reference has been made in these columns, before now, to the apparent supineness hitherto exhibited by the Dominion Government in this matter. But Mr. Stevens—acting, perhaps, on the principle that "new brooms sweep clean"—has now announced that his department is making special efforts to have the Australian preference tariff, accorded to Great Britain, on paper extended to Canada. Since assuming office, the new Minister has opened up fresh negotiations with the Australian Government in behalf of improved trade relations between the two countries. May his efforts in this direction—and especially in the matter of newsprint—be crowned with success !

After being shut down for quite a while, the plant of the Bathurst Company at Bathurst, New Brunswick, has resumed operations with the result of affording employment to some hundreds of hands.

Fire losses during last month, according to the Monetary Times estimate, reached a total of $2,410,300, which is almost $600,000 less than the total of August, and $70,000 less than that of September in last year. But, although there are three months yet to go in this year, the total fire loss for the nine months of this year that have so far elapsed, is only $3,000,000 short of the entire total of last year's fire loss. So that it is practically certain that the total fire loss for this year will exceed the 1920 record.

The plant of the Nipigon Fibre and Paper Company, of Nipigon, Ont., has resumed operations, after being closed down for a short time. A large increase in capacity and, later the erection of a newsprint mill are in contemplation. Indeed, it is anticipated that the daily capacity of the plant will shortly be increased from fifty tons to a hundred tons of groundwood pulp.

The Board of Governors of the Allied Printing Trades is to meet in Toronto this month. It so happens that the meeting will take place while the United Typothetae of America is in session.

The distribution of a supply of coal, or a bonus in lieu thereof, to the striking printers in Toronto, and elsewhere in Canada, was decided upon, several weeks ago, by the headquarters of the International Typographical Union which possesses a strike fund greater than is requisite for the financing of the strikes in progress in Canada and the United States. Arrangements have now been made by the Strike Committee of Local 91, International Typographical Union, for the distribution of fuel to the married men among the Toronto striking printers, or, in cases where the members may reside in apartments, to grant them pecuniary allowances equal in value to the bonuses being distributed in coal to other members.

At a recent meeting of the striking printers of Toronto, Superintendent E. J. Hopcroft, of Donlands Methodist Church in that city, quoted a reference to the Union made by the Rev. H. D. Moyer, Methodist Minister at Goderich, Ont. The latter's remarks commended the action of the Toronto Typographical Union at a meeting, a short while back, which resorted to prayer for the Divine blessing on the striking printers' cause. "When we consider," he said, "that the typographers of Canada and the United States have added ten years to the lives of 50,000 people, have established a home for the sick and aged, raised wages, shortened hours, raised $1,000,000 for old age pensions, and maintained a great system of education, whether they realize it or not, they are making a valuable contribution to the building of God's kingdom and something definitely spiritual in character. What is more natural than that, sooner or later, they should seek the conscious fellowship of Him Who gave His life for the Kingdom? Were Jesus Christ to come back to earth today, I think He would feel more at home in some of the Labor Unions than in some of our churches." The fact that both the Ministers who spoke in this sense are Methodist Ministers gives a certain emphasis to the situation in Toronto, in view of the circumstance that the Rev. Dr. S. W. Fallis, who is chairman of the Defence Committee of the Toronto Typothetae, is also the steward of the Methodist Bookroom.

The master printers in Montreal, by the way, have followed the example of the master printers in Toronto in establishing a school for the training of compositors.

Action has been entered by the Ontario Provincial Government against W. H. Russell, of Port Arthur, Ont., in respect of reimbursement of timber alleged to have been illegally taken by the latter. It is alleged that large quantities of pulpwood have been taken off mining locations, without compliance with the provisions of the Mining Act, and that quantities of pulpwood have been wrongfully cut from Crown lands.

The most needed equalization is not that of the rich and the poor, but that of the over-eaters and the under-eaters.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 8th Oct.—While the general situation in the industry is unquestionably improving, it is yet not without special difficulties of its own at the moment. In conversation with various men prominent in the industry, it has been borne in upon the writer that these difficulties are greatly accentuated and aggravated by the fact that jobbers, in practically every paper line, are going in for price-cutting. It is possible that the extent to which this practice is going on may be magnified by some who conceive themselves to have been injuriously affected by one or two particularly glaring instances which one hears of. But, at the same time, it is notorious that this price-cutting is going on, and those who suffer thereby—or some of them—have, more than once, told the writer that, in their view, a little judicious publicity would be beneficial in stopping, or, at any rate checking, the practice. It is certainly one which strikes at the root of proper method and system. It hampers and hinders due stabilization. For the situation could be stabilized a good deal more readily and easily of this undercutting of prices—and, in one or two recent instances within the writer's knowledge, it has been of a rather indiscriminate kind—were non-existent. The truth probably is that individual jobbers need to have more confidence in each other than they always evince. The manufacturer is certainly doing his part. He is endeavoring—and, in most cases, to the utmost of his power—to co-operate with the wholesaler with the object of stabilizing prices. And it is beyond dispute that if all wholesalers would do their part—which, in certain individual instances, they are not doing—and would be loyal to re-sale prices, much good, in the direction of stabilization, could be accomplished.

The recent improvement in the demand for many kinds of paper continues to be maintained. This, no doubt, is part of the general improvement in the tone of business conditions. According to so high and well-informed an authority on the subject of business as Lord Shaughnessy, "the business outlook in Canada" can be regarded as "promising." This is partly due, as he indicated, to the fact that "the greatest crop, about 275,000,000 bushels, is the greatest ever harvested." This has had a very favorable stimulus on Canadian business generally. It is especially fortunate, in this connection, that, as Lord Shaughnessy pointed out, the United States tariff against Canadian wheat has had no unfavorable effect—in fact, wheat is even moving into Canada from that country.

Altogether, there is no doubt that there is a tone of distinct, if tempered, optimism to the industry. In these colums, the recovery, which is process, has several times been predicted as almost certain to occur at the time at which, as events have transpired, it did, in fact, commence to take place. And it may, with equal confidence, be prophesied that, from now on, there will be a progressive betterment pronounced in nearly all lines. Particularly is optimism pronounced in the West.

PULPWOOD.—There is little change in the pulpwood situation. Nor is there any to be anticipated as has previously been stated in these columns, for a considerable time. Canadian mills, for the most part, have large stocks on hand. And the same thing is true of many mills in the United States. Consequently, logging operations will be on a much more limited scale than usual. As regards prices, there is not likely to be much change for some long time yet.

PULP.—The market for pulp has been showing some improvement in the last week or two. But it is the contention of manufacturers that prices are still very low.

NEWSPRINT.—There is a distinct increase in the demand for newsprint. A good many contracts have been closed up at the fixed price of $80 per ton. But many attempts are being made to secure newsprint at less than that figure, and it is likely that a number of prospective purchasers are, for the present, postponing the closing up of contracts in the hope of being able to do so a little later on. It is somewhat of a detriment that a considerable amount of uncertainty as to whether or not the set price of $80 a ton will obtain for the full current quarter still seems to prevail. Why there should be such uncertainty is not very readily explicable. If trade has now turned the corner, and is on the up grade, as the best informed opinion undoubtedly inclines to think, then there would seem no reason for apprehending that a price less than $80 a ton is likely in the current quarter.

MANUFACTURING STATIONERY. — There is a very encouraging improvement in the demand for manufacturing stationery. Orders are coming in in greater volume and of larger size than had been the case for a long while.

WRAPPING PAPERS. — Business in wrapping papers continues to pick up. Prices are now at rock-bottom. Such, at any rate, is the very general concensus of opinion among manufacturers.

WASTE PAPERS.—As was mentioned last week the demand for waste papers has substantially increased., and this improvement in conditions is still maintained. In fact, the situation, as regards both rags and waste papers, is visibly strengthening—a result which was really inevitable from the fact that many mills had allowed their stocks to become unusually depleted.

BOOK PAPERS.—The situation in book papers continues to afford considerable ground for gratification. The demand appears to be on a really progressive scale.

TOILETS AND TISSUES. — As with wrapping papers, manufacturers generally are agreed that prices are now definitely at rock bottom in toilets and tissues and paper bags.

PARCHMENT.—In this line also business is satisfactory, and here, too, manufacturers assert that there is no prospect of a diminution in price.

NEW YORK MARKETS.

New York, October 8.—(Special Correspondence).—Increasing activity continues to characterize the paper market. Reports from all directions tell of business picking up at a satisfying rate; manufacturers are busier than they have been in months and are booking orders involving large amounts of paper, while jobbers in New York and various other centres tell of con-

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INQUIRIES SOLICITED:

sumers consistently broadening their buying, with the obvious result distributing concerns are finding more to do than in a long time. The situation as a whole is quite gratifying. . Consumers are buying carefully though in heavier volume, showing that consumption of paper is on the rise, thus making for a healthy tone to the market. Prices are becoming well stabilized. Instead of the trend being downward, as it has been for a period of a year or longer, most grades of paper exhibit an upward tendency, as prices are strengthening under increased trade activity.

A feeling of confidence permeates the trade that the improvement thus far scored will continue. It is more or less proverbial that the fall of the year is a lively period for the paper industry, and producers and dealers believe that the improved demand that has set in will not react during the next several months. Opinion is general that the situation will steadily grow better, and that between now and the first of the new year will prove a busy time for the paper trade.

Newsprint demand is gradually expanding. Mill representatives are practically a unit in reporting a larger movement of supplies to publishers, and anyone watching the daily newspapers in New York City alone can readily see the reason for this. Local publishers are printing larger issues almost every day. Department stores in this locality are making a drive to stimulate retail buying and are using an immense amount of printers' ink and advertising space in the morning and afternoon papers to help along the good work. What is happening here is being duplicated all over the States, which means that consumption of newsprint is sharply on the increase.

Prices on newsprint have steadied perceptibly since the first of the current month, when the new contract basis of 4 p.c. per pound on roll news went into effect. Publishers are freely entering commitments on this basis, and are also purchasing considerable tonnage in the open market. Spot prices are steadier than in some time at around 3.50 to 3.75 cents per pound, with some mills demanding and receiving the same price on spot deliveries as on contracts. Were it not for the influence of offerings of imported newsprint at low prices there seems little reason to doubt that spot prices would rise beyond the contract level—where they rightfully belong—and indications are that if present market conditions continue to obtain, spot prices will assume their normal position a little in excess of the contract basis.

Improvement in book paper demand is quite marked. Since the patching up of the wage difficulty between employing printers and their employes activity in the printing trades has shown a steady increase, and the consumption of book papers is improving accordingly. Trade publications, magazines and other periodicals are getting back to normal size and are requiring more paper, which situation is reflected by a broader demand for book paper. Prices are steadied though generally unchanged, with machine finished book bringing an average of 6.25 cents per pound f.o.b. New York and super book around 6.75 cents.

Wrapping papers are enjoying a good demand and are firm in price; in fact, kraft wrappings display a decided upward tendency at a quotable basis of around 6 to 6.25 cents f.o.b. delivery points on No. 1 domestic kraft. Tissues continue active, and the rising trend of ground wood seems likely to carry on coarse tissues up in the near future. Fine papers are moving in larger volume right along, the improvement in business generally being clearly reflected in this branch of the paper market.

Boards are firming and are moving well. Some mills in the East are quoting $40 a ton f.o.b. New York on plain chip and $45 on news board though the bulk of business at present is being consummated at slightly lower figures, around $37.50 on chip and $40 on news being prevailing market values. A majority of board plants are reliably said to have enough orders on file to keep them engaged for two months and longer, and substantial improvement in the paper box industry is a strong factor.

GROUND WOOD.—The ground wood market is firm and characterized by considerable trade activity. If anything, demand is expanding, there being numerous buyers among newsprint, tissue and other paper manufacturers and board producers in action, and offerings of pulp are finding ready takers. Many grinders seem disposed to ask higher prices. Quotations of domestic manufacturers range as a rule around $30 per ton at grinding plants, but higher figures are named in some quarters, up to $35 being asked in certain cases. A strong feature of the situation is that European producers are naming higher quotations, it being stated that about the lowest at which mechanical pulp can be bought on the other side of the Atlantic now is $30 landed here, with offerings even at the advanced level of smaller volume than recently. From all indications stocks of domestic mills are declining, which adds to the market firmness.

CHEMICAL PULP.—There is a fairly good demand for most kinds of chemical pulp and quotations either are holding steady or are gradually working upward, yet it is said that paper mills are still absorbing in the aggregate but a comparatively small tonnage of pulp. Evidently the anti-dumping agitation is causing some

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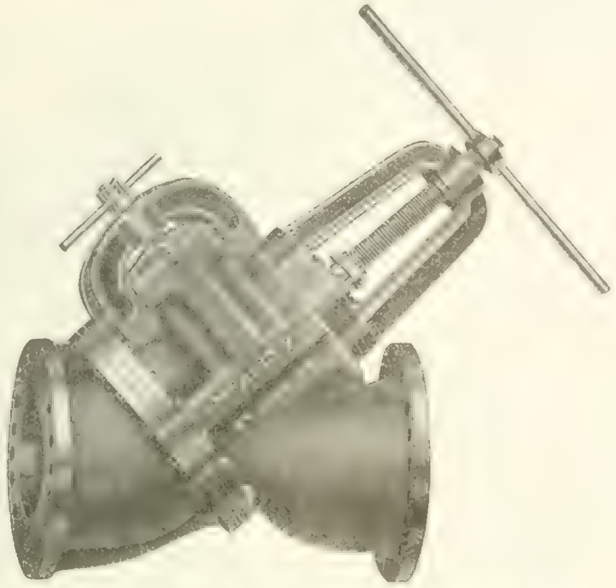

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St. John, N.B. Canada.

consumers of pulp to remain aloof as buyers owing to the uncertainty that this factor naturally gives rise to. Importers in New York held a meeting on Thursday at which the subject of dumping was discussed at great length, following which it was announced that proof of a documentary character was submitted showing that none of the European countries is dumping pulp into America. This proof, it was said, would not be made public at present, but, it was stated, when it is made known will show that the anti-dumping agitation is unfair and uncalled for and that its origin is practically entirely among a handful of domestic pulp manufacturers who take a selfish view of the situation.

Quotations on foreign sulphite are hardening, and bleached sulphite of imported variety is generally held at a minimum of 4 cents per pound on the dock for No. 1 grade, and No. 1 unbleached at from 2.75 cents upward. Kraft pulp is quotably firm, with but small supplies offered at 2.75 cents a pound, both domestic and Scandinavian kraft being held at this price basis. Domestic news grade is steady at around 2.50 cents a pound at pulp mills, and soda pulp at 4.25 cents.

RAGS.—While signs point to paper manufacturers buying rags in rather limited volume, the tone of the market is steadily growing stronger, and dealers view conditions in such a bullish light that many of them are not endeavoring to effect sales at present, choosing to hold stocks for higher prices which they contend will be obtainable in the near future. Roofing rags are decidedly firm in price. Felt mills in the Midle West are buying actively and have paid up to 1.35 cents a pound at shipping points for No. 1 roofing stock, while eastern mills are beginning to evince more interest and are offering around $1 per hundred pounds f.o.b New York for No. 1 packing and between 85 and 90 cents for No. 2 satinets. Dealers assert that roofing rags are held in light supply and that they are coming in from collecting sources in small amounts, and predict a steady rise in prices. New white shirt cuttings also are a firm item. Bids of 9 cents a pound for No 1 cuttings at shipping points frequently are turned down by dealers, who want a half cent or more higher. Old whites are strengthening in price, as are old blues.

PAPER STOCK.—Waste papers continue to mount in price and there is no sign of any impending easiness in the market. Instead, dealers and packers are repeatedly naming higher figures to mills, and are flatly refusing to book orders for large tonnage while claiming to be having much difficulty in locating usual amounts of material. On the other hand, prices have shot up with such rapidity that mills are letting up in their buying to an extent and there does not seem to be as large a demand for some grades as recently. No. 1 soft white shavings, which are especially wanted by mills, are held at a minimum of 3.25 cents a pound at shipping points, and some dealers are asking higher than this price. Hard white shavings are quoted at between [illegible] 75 and 4 cents a pound, old No. 1 heavy books [illegible] magazines at 1.50 to 1.60 cents, white blank news [illegible]ngs at 1.90 to 2 cents, old No. 1 kraft at 2.20 to 2.3[illegible]ts, folded newspapers at 65 to 70 cents a hundr[illegible]nd No. 1 mixed papers at 50 to 55 cents. Such g[illegible]es as new kraft and manila cuttings are said to be pr[illegible]ctically unobtainable in sizable amounts in New York and vicinity.

OLD ROPE AND BAGGING.—Prices on old manila rope have strengthened to a point where dealers are insistent on at least 4.50 cents per pound for rope in No. 1 condition. There is a good demand, with available stocks of rope appearing light. Old bagging is quiet but displaying a firmer tone at a quotable basis of around 75 cents per hundred pounds at shipping points on No. 1 scrap bagging.

MEETING OF SECTION OF CELLULOSE CHEMISTRY.

The New York Meeting was the fourth consecutive meeting at which a special time and place has been set apart for the consideration of the chemistry of cellulose. The first two were symposia under the auspices of the Industrial Division and the other two regular meetings of the Cellulose Section. The interest at the present session was well sustained and the discussions free and valuable. There seemed to be general appreciation of the fact that in view of the very considerable amount of work on cellulose chemistry which is being done abroad we in this country will have to put special emphasis on this important field if our many cellulose industries are not to be left woefully behind in the race.

In an interesting paper Dr. Hibbert, chairman of the Section, outlined the results which have appeared since the last meeting bearing on the constitution of cellulose. Dr. Hawley of the Forest Products Laboratory told of some of the research of that institution which has considerably increased the yield of methanol in wood distillation. The paper by Dr. Tingle on the "Alleged Absorption of Alumina from Solutions of Aluminium Sulfate by Cellulose" aroused much discussion, both among paper men and manufacture of aluminium sulfate.

Professor Hibbert presented the report for the Committee on the Preparation of Standard Cellulose. At the recommendation of the committee it was voted that Dr. Johnsen be requested to present for publication a proposed method for the preparation of the standard sample of cellulose and that a copy be sent by the Secretary to each member of the Section with the request that criticisms be sent direct to Dr. Johnsen, c/o Hammermill Paper Company, Erie, Pa.

The report of the Committee on Viscosity Standards was presented by Dr. Esselen, Chairman of the Committee. By means of a questionnaire sent to the manufacturers and users of cellulose ester solutions the Committee had found that the number of laboratories using the falling ball method for determining viscosities was in large majority. They therefore recommended that they be authorized to proceed to draw up a set of standard conditions for carrying out this method. A vote of the Section authorized that this be done.

The paper by Professor L. E. Wise on the Requirements of a Brief Critical Monograph on the Chemistry of Cellulose excited much discussion. It was finally voted that a copy of the paper be sent to Dr. John Johnston and that he be advised that it was the opinion of the Section that a textbook on cellulose should be first prepared, to be followed after by monographs on specialized phases of the subject.

The Section voted to petition the proper authorities to form the Section into a regular Division.

The same officers were recommended for appointment for another term.

You will find as you look back upon your life that the moments that stand out are the moments when you have done things in the spirit of love.

UNCERTAIN ADVANTAGE OF CHEAP FOREIGN PAPER.

Canadian production of newsprint paper increased from 150,000 tons in 1909 to over 850,000 in 1920. To day the Canadian newsprint mills are equipped to produce about 1,000,000 tons of paper a year. They are supported by what is admitted to be the greatest potential pulpwood reserves in the world.

About 80 p. c. of the output of these mills is marketed in the United States. During the twelve months ended August 31st American newspaper publishers purchased and used no less than 637,266 tons of Canadian newsprint, exceeding the record of the preceding twelve months which included the period of the greatest demand for newsprint ever known.

Contracts for next year's supplies of newsprint are now being negotiated. They show no diminution in the American demand for Canadian paper.

The Canadian newsprint manufacturers, while appreciating fully these evidences of confidence and goodwill upon the part of their American customers, realize at the same time that it would be impossible for them to hold this confidence and goodwill if it were not to the advantage of the American publisher to buy his paper in Canada.

They believe that the quality of the paper they supply, the service they are able to render to their customers, the advantage they are able to offer through the proximity of their mills to the American publishing centres, their fair dealing and reasonable prices, are the factors which have brought them and will continue to bring them their American trade.

They take pride in the fact that their long connection, with and intimate knowledge of the American publishers' requirements enable them to supply paper best adapted to their needs and with a variation in weight and quality not greater than ½ of 1 p.c. They maintain expert traffic departments to control shipments from the mills to the customers' warehouses, which obviate irritating delays and other shipping annoyances. Their situation enables them to ship at short notices, relieving their customers of the necessity of maintaining large reserve stocks and of tieing up large amounts of capital, a distinct advantage in a market whose normal reserve stocks do not exceed 70 days' supply and frequently drop to less then half that amount. They recognize that the exigencies of the newspaper publishing business require the elimination, so far as is humanly possible, of all risks of non or uncertain deliveries. They believe it is of benefit to the publisher to be in close communication with his source of supply so that errors may be checked up and reparations secured, when due, without delay.

The Canadian newsprint manufacturers are confident that these factors outweigh in the long run the mere question of cheapness, and particularly so when cheapness is dependent upon the accident of a debased currency which, at best, can only be of temporary duration. They do not doubt that sensible American newspaper publishers realize fully their dependence upon a permanent supply of newsprint, produced on the American continent, whatever temporary advantage may be offered by a transient supply of low priced paper which will disappear with the causes that now alone make it possible.

They give the American publisher full credit for the ability and the willingness to examine the newsprint question on its merits in its broadest aspects both as to immediate expediency and future requirements and they entertain no apprehension as to his ultimate and intelligent judgment. Canadian Pulp and Paper Assn.

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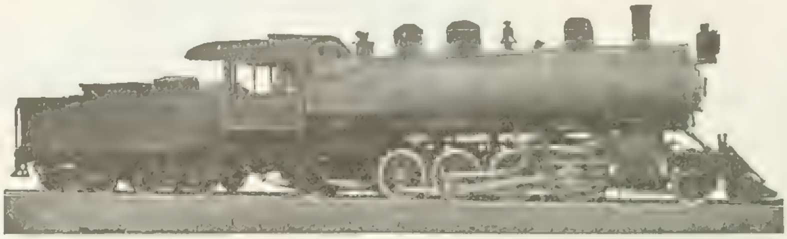

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VOL. XVIX. **GARDENVALE, P. Que., October 20, 1921.** No. 42

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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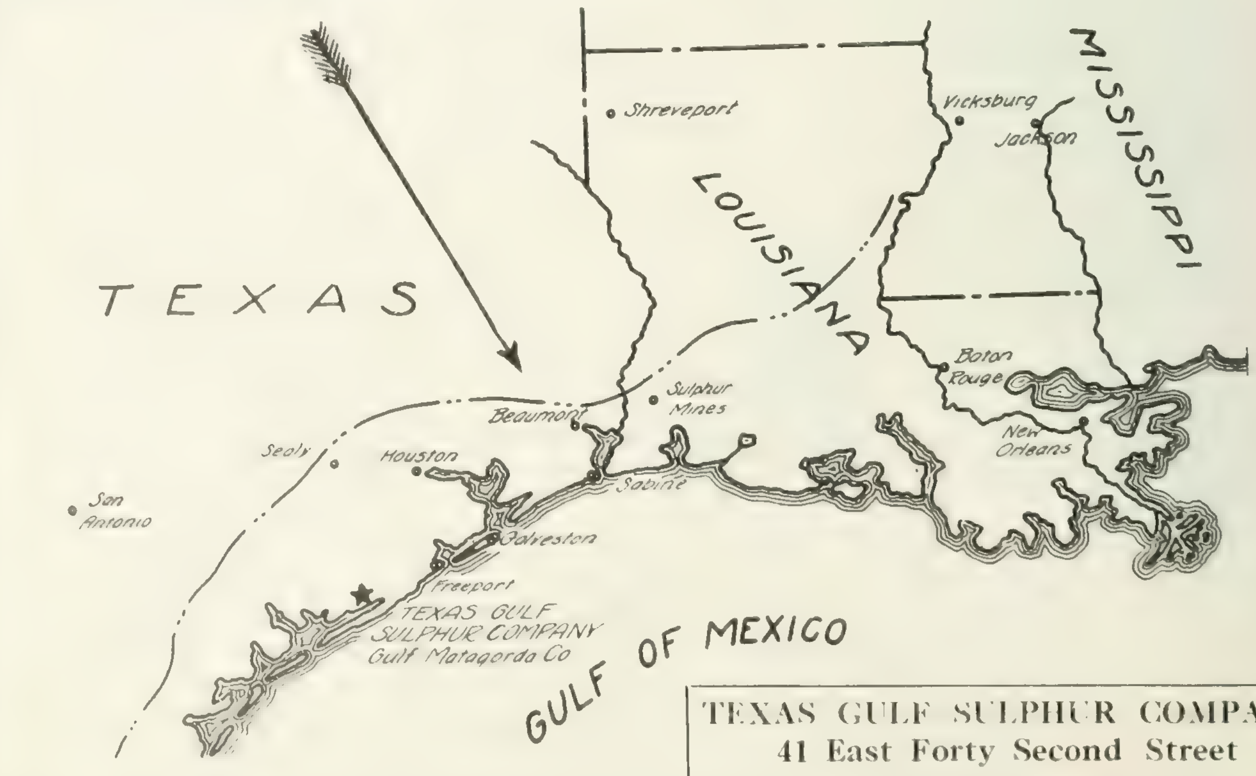

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EDITORIAL

WHAT IS PROSPERITY?

One of the expressions most frequently heard during the past six months, is, "normal times," or "normal conditions." President Harding has attempted to describe the whole situation by coining the word "normalcy." There is a little uncertainty as to just how this word would be defined but it evidently represents a condition of affairs which people generally are hoping will develop. It can hardly represent something to which we are going, in the sense of an approach to an established place or condition, nor can there be such an event as a return to conditions which existed in times past. The clock cannot be turned back nor can the wheels of progress be reversed. Business, society, politics and individuals are continually going forward and what is to come is not something that has gone before but something which we are building, shaping, and developing, every day and every week. We believe that **prosperity** is a better expression for the condition that we hope and work for than the word normalcy; it matters not whether the circumstances which are to surround us are like or unlike those in which we have lived and worked.

To bring about again, even were it possible, such conditions as we had two years ago or six years ago, would not bring any great degree of general satisfaction. Every set of conditions brings with it its own opportunities for happiness as well as its own difficulties and problems. The principal thing is that we should enjoy our opportunities generously and that we should meet our problems bravely and tackle our problems confidently. It is by making the best of the circumstances in which we find ourselves each day that we are prepared for a better tomorrow.

We do not want to go backward, we must go forward. We do not want the big earnings, the artificial living, the wasted opportunities and profits of yesterday, we want the happiness and prosperity that awaits us tomorrow. Prosperity and not normalcy is the object of our efforts and our hopes. The question then, is, "What is Prosperity?"

Prosperity cannot be expressed in terms of wages, nor in terms of profits, nor in terms of dividends. It can be expressed in terms of work for everyone with a sufficient return to provide for all of the necessities and a fair share of what may be called luxuries. The relief from worry which comes from the assurance of a steady job, thus bringing the opportunity to labor without anxiety, brings enjoyment and satisfaction to all who labor for those they love. This is the essence of prosperity. No matter what wages may be nor what profits may be, a nation, a community, or an individual is not prosperous in the true sense of the word unless there be satisfaction of accomplishment. An idle population cannot have this satisfaction. Profits taken at the expense of employment cannot bring this satisfaction.

It is, therefore, a matter of great concern that, especially at this time, every possible step be taken to maintain production on a basis which will give the widest possible employment. It seems a mistake and a pity that, as soon as there is evidence of greater demand for a product at this time, the situation is made an opportunity for increasing the price of the article rather than extending activities of production which by all the laws of economics should result in decreased unit cost and therefore, approximately the same gross profit in the long run as is obtained by the perhaps quicker and easier way of immediate boosting of the price.

There are apparently two reasons why prices are boosted under such conditions as we find today. One is that such a course may bring investors a higher profit in dividends, somewhat commensurate with the frequently unusual earnings of the past couple of years, and the second is that some concerns are so financially pressed that every opportunity must be taken to convert their products into the maximum amount of cash in order to liquidate their obligations. On the other hand, a little reasoning will show that apart all together from the concern's obligation and responsibility to maintain working forces at maximum strength from a purely humanitarian point of view, it is good business to sell the greatest possible volume at a fair profit.

One of the puzzling situations which confronts our industry at the present time, is competition with countries that are selling at a lower price than it may be possible to meet. This may be because other countries are satisfied with a smaller margin of profit or it may be that their costs are enormously lower than manufacturing costs here. Our point is that by keeping the selling price at such a point that but a fair margin of profit is obtained and with the confidence of the consumer that this is the case, there will be a constantly increasing demand and a consequently firmer hold on the market by manufacturers who follow such a course. To follow such a policy will mean that many firms will be obliged to make rather drastic cuts in the value of raw materials. Such action has been fairly widely taken by many manufacturers already and no doubt the figures used at the present time are fairly near the cost of replacement at current values. For a number of years some of our mills were prevented from marking up the prices of their product in harmony with increased costs of production and there is some question as to whether when the opportunity came to do so, they took sufficient advantage of it to completely recover the ground previously lost. This handicap was suffered principally by one branch of the industry while other branches should have benefited enormously by the unusual circumstances. If the present were a case of ordinary slackness of business, there would doubtless have been more prompt reflection of lowered costs and a wider drop in prices than has taken place.

The period of inactivity has, in some cases, it is stated, completely wiped out the profits made during the period of high prices. But even taking that unfortunate circumstance into consideration it seems that the best and perhaps the only way of developing a prosperous condition of affairs is to readjust prices to present costs, to reduce prices still further as cost of production may be lowered and thus while making a fair margin of profit, maintain the maximum production and consequently the maximum employment. By thus employing the greatest number it means that a greater number of people are spending and there is no doubt but that there would be a more immediate reflection on business conditions by distributing a large proportion of money received from goods among the employees who will immediately spend it for necessaries than to distribute a larger share of a smaller total return from limited production to a few stock holders who will be less likely to give such money an immediate re-circulation.

Mr. MILLEN IS 83.

Four years ago the editor first met Mr. George H. Millen, President of the E. B. Eddy Company. From Mr. Millen's keen observations and his bright, interesting conversation and the unusual activity with which he was known to carry on the affairs of this great company, we took him to be a man in the early seventies; in fact, many a one with fewer years appears older, but as Mr. Millen wears the little bronze button that marks him as veteran of the American Civil war, we knew he must be at least as old as the editor's father who had been his comrade-in-arms.

It is, however, not so much Mr. Millen's marked ability as a great industrial leader which marks his position in Canada, as the kindly character of the man which endears him to all of those with whom he comes in contact. This happy faculty of his for kindliness and cordiality was shown by an incident of our first meeting when, on remarking how much one of the little samples of Eddy's fibre wash boards, noticed in the office, would please the editor's niece, Mr. Millen's eyes immediately lighted up with appreciation of the pleasure that such a gift would bring and proceeded to have one of those little boards wrapped up.

When Mr. Millen wakes on Sunday to begin his eighty fourth year, he will be able to look back on a life longer than the average by a good many years and a far more active one than of many younger men. He can, if his natural modesty permits him, recall many kindly words and acts and worth while accomplishments and he will certainly be assured of the friendship, the fellowship, the respect and the love of thousands who have come in contact with him and under the influence of his kindly personality. But Mr. Millen will probably not look back on the years past but will look forward, planning keenly for tomorrow's work and the developments to be accomplished in the years to come.

FOR I'M JUST AS YOUNG AS I USED TO BE.
Geo H Millen
Burney — Ottawa
Who is it?

OTHER FOLK'S GERMS.

May get on you if you wipe your hands and face on a towel that they have used. Trachoma, gonorrhea, syphilis, and many serious diseases of the eyes and skin are often spread in this way.

Get a towel for your own use, keep it in a clean place, and do not lend it to others.

Paper towels are safe; beware of the roller towel.

FIRE!

Most fires are caused by lack of care. Scraps of material—wood, paper, cloth, etc.—should not be allowed to accumulate.

Oily waste or rags should be kept in metal waste cans with self closing covers.

No smoking! Clean up or report conditions which may cause fires.

Fundamental Chemistry in Paper Making*

By J. L. A. MACDONALD, D.S.O., D.Sc.

The Present Position of Chemistry in Papermaking.

What part does chemistry play in the paper industry to-day? Is there a field for fundamental chemical research, or is there none?

It is true that chemistry is doing much for papermaking, but it is no less true to say that the industry is a realm largely unexplored by the chemist, mostly for lack of incentive or opportunity. It is only natural in an industry that that side of it which is of obvious importance should receive a greater part of the attention of the manufacturer. In papermaking, the principal process being the formation of the web, it is only to be expected that the lion's share of thought and energy should be devoted to development of the engineering or physical side of the industry. This is just and right, but it is altogether unfortunate that the latent possibilities of other sciences should have been overlooked as they undoubtedly have been.

The view is commonly taken that the practical application of chemistry is limited to those cases in which the products are the final result of a series of more or less well-defined chemical reactions. But this is far from being the case. In practically all industries chemical knowledge is of value for purposes of control, and it is probably the case that the causes underlying the majority of the troubles, giving rise to customers' complaints, can be traced in most industries to a "chemical" origin.

There are many directions in which chemistry is of obvious importance in the paper mill. For example, the benefits which result from a knowledge of the "chemical quality" of incoming raw materials as ascertained by analysis are probably so well known as to require little comment. The production of caustic soda and resin size involve processes of chemical change, and even the preparation of alum, bleaching powder, and dye-stuff solutions lose nothing from the attentions of a chemist.

The digestion of rags and esparto, and the bleaching of these and other fibres are chemical processes which have received a considerable amount of attention from the mill chemist, but most of the investigation has been of a directly technical kind, and little progress has been made towards advancement of our knowledge of the ultimate mechanism of the changes which are involved. Up to the present time it has apparently not been worth while to investigate these processes more closely, probably because a sufficiently good result is got without difficulty or much attention to detail. Day by day it is becoming forced upon us more and more clearly that existence upon our export trade. Competition is rapidly increasing in our foreign markets, and it therefore becomes more and more important that no avenue which may lead to the production of cheaper or better quality goods should be left unexplored. I suggest that the papermaker again give his careful consideration to the advisability or otherwise of instituting further scientific inquiry into the many unsolved and controversial problems of digestion and bleaching.

Chemistry recognises two principal types of matter. Matter which cannot be split up into anything simpler except by chemical agency it regards as a compound. Typical examples of such compounds are cane sugar and common salt. On the other hand, two or more "compounds" may be so intimately mixed together as to present all the external characteristics and qualities of a pure simple compound, but yet such material may be separated into its constituent compounds by physical means. Such matter is described as a "mixture." Compounds are built up of atoms of two or more different kinds, the proportion in which the several kinds appear being quite definite for each particular compound. One of the most important functions of chemistry is to ascertain what atoms are present in a compound, and how they are linked up together one to another, since it is these two conditions which largely control the chemical behaviour of the compounded substance.

A very common method of chemical inquiry is therefore to ascertain what is known as the "constitution" of the substances involved. By the knowledge so obtained the chemist is often able to exert better control over the chemical activity of the substance and so produce better yields, purer substances, and new products.

For these reasons it is not a little surprising that there has been so little organised attempt to elucidate some of the many problems of papermaking on a "constitutional" basis. It stands to reason that unless the manufacturer knows something about the chemical structure of the compounds he has to handle, he must be to some extent handicapped in carrying out the methods of his process. Such investigations relating to the atomic structure or constitution of material are typical examples of fundamental research, and in them we have a field of inquiry holding much promise of profit for the investigator.

The basis of a sheet of paper is a film of innumerable vegetable fibres; many kinds of fibres are used and we are content to include them all in the comprehensive term of "cellulose"; it is recognised that different fibres possess different papermaking properties, but we have no very clear idea why this should be so. Here then, surely, we have an outstanding example of a case where investigation into the constitutional character of of the different celluloses should prove of prime importance.

Consideration of the import and production figures only serves to emphasise this view. In 1919 over 1,000,000 tons of crude fibre were imported in various forms, which it is calculated represented at least 600,000 tons of "cellulose." The unofficial estimate of the Papermakers' Association of the pre-war production of paper in Great Britain and Ireland is 1,092,000 tons a year, which means that, roughly, 750,000 tons of "cellulose" are put through the papermaking process annually. Clearly it should be worth while to know something more about the chemical constitution of the celluloses.

The Fundamental Chemistry of Cellulose.

It not infrequently happens that the chemist inquiring into the constitution of a compound finds it more convenient to turn his attention to derivatives of the parent substance in the first instance. Knowledge may often thus be gained which is sufficient to enable the investigator to surmount obstacles which previously barred his direct attack of the problem. Information upon the chemical nature of derivatives of the celluloses is, therefore, also likely to prove of no little value to the papermaker, in spite of the contention that the basis of paper is cellulose, and not its derivatives. Such knowledge must particularly appeal to the esparto papermaker, because the first step of his process is the removal of the non fibrous elements of the raw material by a somewhat drastic chemical treatment. It is commonly accepted that if the appropriate amount of caustic soda be used, a sharp separation of the non-fibrous portion by a process of solution takes place, leaving the true fibrous cellulose unattacked. Let us see what light the present state of our knowledge of the chemical constitution of cellulose throws upon this problem.

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*Read at the Edinburgh meeting of the British Technical Section.

A considerable number of years ago, Ost and other chemists formulated the opinion that cotton cellulose consisted of a condensed aggregate of grape sugar (glucose) molecules. This conclusion was hardly justified by the experimental evidence available, and the question has recently been reopened by Irvine, who has succeeded in preparing a large proportion of glucose (85 per cent. theoretical on above assumption) from cellulose with full proof of its identity (as glucose). This work received further confirmation no later than last month (Williams). Esparto cellulose differs in several respects from cotton cellulose, a noteworthy feature being that it is not nearly so inert towards chemical change, but there are reasons for believing that glucose or some closely related sugar forms a constituent part of the molecule. It is therefore of some interest to notice the behaviour of sugars towards alkalis such as caustic soda, as it is not unlikely that any reaction between the two may have considerable bearing upon the removal of the non-fibrous materials of esparto grass by caustic digestion. The reaction between alkalis and sugars is a most remarkable one, but it is of so complex a character that I can make no attempt to describe it here. Let it suffice to say that in a long series of fundamental researches spread over his whole life Nef demonstrated that if caustic soda be allowed to react with any one sugar, profound changes take place, and so deep seated is the reaction that more than two hundred different chemical compounds are produced. This is indeed a startling result, and makes it clear that a most careful watch requires to be kept upon the alkaline digestion of all cellulose fibres. In point of fact, we know that celluloses are profoundly modified by the action of alkalis, but it is far from being appreciated in the industry that, not only may serious losses of cellulose take place from this cause, but also that the modifed cellulose so formed may produce effects which persist even in the finished sheet. Further information of the precise effect of alkalis upon cellulose can only be obtained by carefully guided fundamental research, but it is to be devoutly hoped that results may be obtained in a shorter period of time than has been required to establish our present knowledge.

A further problem of paramount interest to the esparto papermaker is the utilisation of the fifty per cent. so-called "non-cellulose" matter present in the grass.

To-day we are content to look upon this as a necessary evil, and in some cases to make use of it to preheat the lye for evaporation or to generate steam. But it seems a pity in a country like our own, which is rich in coal, to use a material which we have taken the trouble to bring all the way from Africa merely as a fuel. Many attempts have been made to extract useful products from this material, but none have proved altogether successful. In the discussion on a paper recently read by Raitt in London on the subject of Bamboo papermaking in India, Sindall raised the question of Rinman's patented method of treating the soda lyes, which apparently aroused some interest. By this method the lyes are concentrated and finally heated in presence of lime, whereby acetone, methyl alcohol and methyl-ethyl-ketone are produced and distil over. These are valuable products, and if obtained in sufficient quantity, might make the process a practical one. I do not think, however, that the problem will be satisfactorily solved as far as esparto lyes are concerned until much fundamental work has been done upon the chemical character and constitution of the bodies composing the "non-cellulose" portion of the "complex"—esparto grass. Once the chemical indentity of these components has been proved, then we shall be ready to go ahead with the recovery of useful by-products on sound scientific and practical lines.

I trust I have produced sufficient evidence to justify my contention that the prosecution of fundamental chemical research merits the early attention of the papermaker. Germany, the United States of America, Canada, and Japan are working tooth and nail to develop the scientific side of papermaking; it is going to be a race for the markets of the world and the winner must inevitably be the vendor at the lowest price and of the highest quality.

A Note on the Chemistry of the Beating Process.

The reactions which take place in the beating engine are conveniently considered under four headings—first, the separation of the fibres by the action of the roll, whereby felting quality is obtained; secondly, the cutting of the fibres to the required length, again by action of the roll; thirdly, the incorporation of water with the fibre, which produces "wetness" or hydration; and, lastly, the treatment of the fibre with resin soaps and dye-stuffs, by which means sizing and colouring the web are effected.

The first three of these reactions are commonly regarded as the result of the mechanical action of the roll and are therefore deemed physical processes, while the fourth is usually considered to depend upon the collodial character of cellulose and therefore to be within the domain of colloidal physics. It is notable that chemistry as such is not held to play any very important part in beating reactions.

If we trace the development of the beating process proper, apart from sizing and dyeing, we find that progress has been in direct proportion to development in beater design, at all events within recent years. As a result, we have many excellent types of highly efficient beaters to choose from, but at the same time we have made comparatively little progress in our conception of "cause and effect" in the beating process.

It therefore appears to be of interest to consider some recent fundamental work and to examine what influence it may have upon our ideas of beating.

In the short space of time available it is not possible to attempt a review of recent inquiry, and I have, in consequence, selected two lines of investigation which well serve (1) to draw attention to the possible value of fundamental research, and (2) as a reminder that beating problems are not necessarily confined to the mechanical sciences.

The first case to which I wish to refer has reference to the mechanism of the sizing process. All papermakers at some time or another encounter mysterious sizing difficulties; either the sheet suddenly becomes too hard or, what is more usual, the hardness no less suddenly drops away, and nothing that is done seems to have any beneficial effect.

I do not propose to enter into a discussion of the underlying mechanism of the sizing reaction, but I believe all will agree that it is far from being properly understood. With regard to methods, each papermaker has his own preference, but, on the whole, today acid sizes seem to be the most popular. That is to say, sizes which contain a relatively large proportion of free resin are in a majority. The recent work of Dr. Sieber, of Kramfors (''Zellstoff und Papier,'' 1921, p. 15), is of special interest, since this investigator has re-opened the problem by a study of the behaviour of colloidal suspensions of pure resin, particularly with regard to the effect upon them of aluminium sulphate (—papermarker's ''alum''). The details of the work can be obtained from the original accounts, but, briefly put, the experimenter examined the effect of the addition of the aluminium sulphate in increasing amounts upon the resin suspension after the lapse of a certain period of time. Dr. Sieber finds that the addition of very small amounts of aluminium sulphate produces no effects; as the quantity added is increased, complete precipitation of the resin occurs, but, on further increasing the quantity of aluminium sulphate added, no effect is produced, while, on still further increasing the amount of alum, complete precipitation again takes place. (See translation, Pulp & Paper, Oct. 13, 1921.)

The author puts forward one explanation which at least serves as a working hypothesis: those interested should consult the original paper. The author also examines the effect of the salts which commonly produce hardness in water with somewhat similar results, and as the result of experiments conducted to determine the effect of several salts jointly, the conclusion is reached that hard waters may produce precipitation without the quantity of each individual salt present exceeding the minimum (critical) value. On the other hand, he finds that a suspension of pure free resin is stable to even very hard water, which is not the case with the ordinary resin ''milks'' as used in the paper mill. From further considerations the author argues that the object of the papermaker should be to obtain the largest possible surface area in the free resin portion of his size, which means that the smaller the particles of precipitated resin are, the harder will the sizing be.

Experiments were also carried out to determine how resin is affected by cellulose fibres. Although not directly conclusive, absorption appeared to take place on the boundary surface of the fibre, but the interesting fact appears that the storage of free resin on the fibre does not give the fibre any ink-resisting properties.

Experimental work is apparently still in progress, and one looks forward with interest to the further results which Dr. Sieber may obtain. In the meantime it is too early to attempt any criticism, but it does not seem too much to hope that this fundamental research will lead to results which may do much to clear away the uncertainty and ignorance which still surround the engine-sizing process.

Hydrocellulose and Oxycellulose.

The second instance to which I wish to draw attention concerns our third subdivision of the beating process, namely, the production of ''hydration'' or wetness.

The view is usually held that hydration is the outcome of the combination of the cellulose with water as the direct result of the mechanical bruising action of the roll. It is well known that certain types of colloidal substances possess the power to take up water in semi-combination to a remarkable degree, and as applied to the beating problem in question such a hypothesis offers a convenient explanation of the production of wetness.

Of considerable interest in this connection are the investigations of Schwalbe. Professor Schwalbe has carried out a long series of researches extending over many years upon the decomposition products of celluloses (particularly wood-cellulose). His results lead him to the conclusion that it is not the cellulose as such which is the direct cause of ''wetness,'' but that products formed by the chemical decomposition of cellulose are the reactive bodies in the production of hydration. This investigator concludes that hydro-cellulose and oxycellulose are chiefly concerned in the process, and he seems to incline to the view that the latter is all-important, since he has taken out a German patent (D.R.P, 1920, 303,305) for the production of wet stock, the basis of which is the formation of oxycellulose by chemical agency prior to the beating proper; by this means he achieves very rapid hydration.

It is important to note that the chemical constitution of hydrocellulose and of oxycellulose is unknown, and also that their relationships one to another and to the parent cellulose are not properly understood. Professor Schwalbe, realising the importance of gaining information upon these points, has undertaken further fundamental inquiry into this problem, and his published results are of considerable interest.

We may also note that on the other side of the Atlantic the hydration problem is also receiving attention. In U. S. A. Seibert and Minor, as the result of their researches upon chemical reactions in the beater, have also reached the conclusion that a substance which they designate ''hydrocellulose'' is the real medium by which hydration is effected.

We have therefore to face the fact that two independent authorities have both reached the same conclusions—firstly, that hydration of cellulose is not the simple combination of the cellulose with water which is usually assumed, and, secondly, that the effect of the mechanical bruising action of the roll is to produce profound chemical changes of a somewhat unexpected character.

It is too early to attempt useful criticism of this view, but it would appear that in the near future not only may we have to modify seriously our views of the beating process, but that the distinct possibility exists that we may before long have radically to alter our beating practice.

The important point about these investigations, upon which I wish to lay special emphasis, is that they are essentially the outcome of fundamental experimental research. Much further work of the same character requires to be done before technical results can be expected, but the interesting fact is patent that fundamental chemical research may find application in a totally unexpected direction.

Conclusion.

Germany, the United States and Canada are actively prosecuting chemical inquiry into papermaking problems.

If the British paper industry is to maintain its place in the world's markets, it would appear unwise to neglect this avenue to progress.

Prospects Brighter in Belguim

Belgium, September 1921.

The general crisis, which since nearly one year has been causing the utmost inactivity in practically all branches of business, has not been without badly affecting also the Belgian Paper Industry.

The importance of the decline is expressed in the following table of total imports and exports of pulp, paper and board, for the first half of this year, as compared with previous periods since the armistice.

	Imports	(Net in gross tons)		Exports
	6 first months	Whole year	6 first months	Whole year
Wood Pulp				
1919	14,576	54,979	....	1,475
1920	57,661	117,235	7,388	15,681
1921	15,091	....	2,288	
Wall paper				
1919	972	1,889	1	533
1920	1,183	2,002	1,033	2,240
1921	1,006	....	1,074	
News Print				
1919	4,083	8,155	15	99
1920	2,721	5,406	109	960
1921	1,710	....	1,529	
Board and non-denominated paper				
1919	5,175	15,226	426	3,523
1920	12,604	21,714	8,187	24,612
1921	6,230	....	10,290	
Totals				
1919	10,231	25,266	442	4,156
1920	16,509	29,124	9,331	27,813
1921	8,947	....	12,894	

The imports of wood pulp for the six first months of 1921 amounted only to 26 per cent of those for the corresponding period in 1920.

In detail they were as follows for the first six months of 1920 and 1921 respectively, in gross tons:—

Imports of wood pulp (total), 57,661 (1920), 15,091 (1921); from Finland, 1,297, 1,286; Germany, 267, 654; Norway, 31,273, 8,436; Sweden, 22,698, 3,241; other countries, 2,125, 1,472.

In the quantities "From other Countries" are included 347 and 214 tons, for the comparative periods of 1920 and 1921 respectively, exported by Canada.

As only relatively small quantities of pulp are manufactured in Belgium, the amount of the pulp imports constitutes a more or less exact indication of the degree of activity in the paper trade. In the present case, it ought to be taken into consideration, that the past year left an excessive surplus of pulp.

Imports and exports of board and paper were as follows, in gross tons, for the first six months, 1920 and 1921 respectively:—

Wall Paper.

Imports (total), 1,183, 1,006; from France, 378, 224; from Germany, 188, 602; from Great Britain, 534, 77; from Holland, 79, 85; from other countries, 2, 16.

Exports (total), 1,033, 1,074; to France, 691, 633; to other countries, 342, 440.

News Print

Imports (total), 2,721, 1,710; from Germany, 31, 697; from Holland, 2,365, 951; from Sweden, 189, 20; from other countries, 135, 41.

Exports (total), 109, 1,529; to France, 68, 746; to Great Britain, ..., 579; to other countries, 41, 203.

Board and non denominated Paper

Imports (total), 12,604; 6,230; from France, 1,128, 524; from Germany, 3,823, 3,412; from Great Britain, 2,398, 353; from Holland, 2,501, 1,286; from Norway, 564, 34; from Sweden 1,191, 326; from other countries, 996, 292.

Exports (total), 8,187, 10,290; to Argentine, 34, 568; to France, 3,813, 1,539; to Great Britain, 2,235, 3,644; to Turkey, 51, 404; to United States, 121, 434; to other countries, 1,213, 3,123.

In "to other countries" are included exports to Argentine, Brazil, Egypt, British India, Spain and Uruguay, amounting respectively to 0.3, 0.05, 1.1, 0.9, 0.2 and 0.03 per cent for 1920, and 2,7, 1.1, 2.0, 3.4, 1.7 and 2.5 per cent for 1921, of the total exports.

The fluctuations in the imports and exports during the comparative periods, dealt with in the preceding tabulations, are condensed in the following statement:

Wall paper, imports decreased 14.9 per cent; exports increased 3 per cent. News Print, imports decreased 37.1 per cent; exports increased 13.02 per cent. Board and non denominated paper, imports decreased 50.5 per cent; exports increased 27.4 per cent.

Compared with the average imports for the whole year of 1920 the figures are as follows:—

Wall paper, imports increased 0.5 per cent; exports increased 4.1 per cent; News print, imports decreased 36.7 per cent; exports increased 218.4 per cent. Board and non denominated paper, imports decreased 62.7 per cent; exports decreased 7.8 per cent.

In fact, the import and export trade has been ruled for a great deal by the exchange factors and it is worth mentioning that imports have decreased from those countrits with a favorable exchange (Great Britain, Holland, Sweden and have increased from countries with a depreciated exchange (Germany) while on the other hand exports have been principally directed to countries with a favorable exchange.

Exports to France came practically to a stand-still through two successive increases of the import duties viz. in March and July.

Then, since the second half of 1920 accumulated stocks of pulp and paper, purchased at high prices, have been proving a serious impediment to normal transactions and under the influence of unfavorable circumstances — German cutting of prices, lack of confidence of buyers and their destructive policy of holding back in the falling market in the expectation of progressive reductions to an approximately pre war level — owners have had to dispose of them at heavy sacrifices, absorbing in most cases the better part of earlier profits. A typical illustration of such financial adversity is the following: the profits of a certain paper-mill amounted for the year 1919 to 601,729 frs. and 418,556 frs. were distributed in dividends; the profits for the year 1920 amounted to 3,294,856 frs., and after provision in the evaluation of stocks of raw materials through a fall in prices, only 266,906 frs. were distributed in dividends.

Some temporary revivals were noticed after the London Reparations Conference. The prospect of the application on Germany of "sanctions", stopped for some time the imports from this country, prices grew firmer, buyers were more decided and even a very satisfactory export trade, especially with England, occurred; but in no one of these periods of recovery did the output exceed more than 60 per cent of the average paper production in 1920. Unemployment has not been very extensive.

(Continued on page 1078)

The Structure of Cereal Straws

By FRANCIS E. LLOYD, F.R.S.C. McGill University.

(Concluded from last issue.)

Leaf sheath, near ligule: wheat = oat = barley; rye
near base: wheat; rye=barley; oat.

Wheat has the stiffest leaf sheath throughout its length, while rye and oat show the greatest change from base to apex. When all is said however, from the point of view here taken, this feature is of perhaps least value.

There are similar but not so great differences in the thickness of the cell walls of the epidermis in different parts of the internode, coupled with the absence, at the base, of stomata and stomatal zones. In all the straws, the thickness of the walls decreases toward the base, their sinuosities are entirely absent, and their caliber becomes much reduced. Indeed, the difference in the lower part of an internode are so slight as to be practically negligible, although, in unmacerated epidermis, the oat can be distinguished from the others by the thicker walls. The series are, in order of thickness of cell wall as follows:

Lower internode: near top: wheat (9 microns); oat (6 microns) = barley = rye.
near base: oat (3-6 microns); wheat (2-3 microns = barley = rye.

The width of the epidermal cells of the stomatal zones affords an additional criterion of distinction which is of some help. The following measurements were made on five different leaves and five different stems, the leaf specimens taken near the ligule, and from the internode correspondingly near its apex. About 150 measurements of each species were made, each measurement being the total width of from five to twelve cells, taken transversely. Two sets of measurements were made several days apart, and they were found to check, this also in the case of the stomatal measurements just beyond.

Minimum, mean and maximum width of epidermal cells (with wavy outlines) of stomatal zones, (in microns) :- -

	Leaf sheath	Stem
Barley	16 - 20 - 25	15 - 17 - 18
Oat	25 - 27 - 31	19 - 21 - 23
Rye	22 - 24 - 28	18 - 20 - 22
Wheat	24 - 27 - 32	20 - 21.5 - 24

These measurements may not of course be taken as a single expression of unvarying size for each kind of straw, but they appear however to express with fair accuracy the relative values of the different kinds. The order of the series for both leaf and stem is therefor: Wheat; oat; rye; barley, there being less difference for the stem than the leaf. In the former the differences are too slight for practical purposes, and therefor can scarcely be used to advantage.

Measurements of length of the epidermal cells appear to be of less value that those of width. Wiesner (1900) gives the following dimensions determined by him.

	Length (microns)	Width (microns)
Barley	103-224	12-14
Oat	186-448	12-14
Rye	86-345	12-16 (14)
Wheat	152-449	18-24

Weisner does not tell us what epidermal cells they are that he measured, and it has become quite evident from my own observations that it is important to know this. That his data are of restricted value appears at once when they are compared with the following made by me on the epidermis which yielded my own measurements of cell width, given above.

Epidermis.— Length of cells in microns.

Species	Stem (lower internode) Upper part	Stem (lower internode) Lower part	Leaf-sheath
Barley	39-270	450	30-186
Oat	45-405	240	225-2100 (15)
Rye	30-270	630	45-300
Wheat	60-300	585	30-330

(15) The epidermal cells with straight (non-sinuous) walls are by far the longest, those having lengths of 1,000 to 1,500 microns being frequent.

The length of the cells varies very much with the position, the shortest occurring in the vertical series which include the stomata, the longest in the non-stomatal zones, where the outlines are either less wavy or not at all. In macerations, the latter might easily be overlooked. At all events, with such wide limits, and we note in passing especially the oat, the application of these measurements would have only an equivocal value.

The stomata show very considerable differences in size when the transverse and longitudinal measurements are taken separately. Measurements of 100 to 200 stomata taken from five specimens of upper part of leaf and of a lower internode gave the following data.

Measurements of stomata (in microns).

	Leaf sheath		Internode	
	Length	Width	Length	Width
Barley	50	26	47	26
Oat	63	25	55	29
Rye	56	29	58	31
Wheat	56	37	56	34

It has been seen that wheat has by far the widest stomata* while in the leaf sheath the oat has the longest. There is however considerable variation in the size of the stomata, especially from different regions of the organs which carry them. This offers a difficulty of course in view of the fact that in macerations the stomata from these regions are mixed together. The variation due to this alone is indicated in a general way by the following comparative measurements.

Stomata of internode.

	Basal internode (upper end)		Terminal internode	
	Length	Width	Length	Width
Barley	45	33	48	33
Oat	60	45	55	33
Rye	57	36	60	[illegible]
Wheat ..	55	45	[illegible]	[illegible]

Stomata of leaf sheath.

	Near ligule		Near base	
	Length	Width	Length	Width
Barley ..	43	24	[illegible]	[illegible]
Oat	60	27	49	30
Rye ..	54	24	[illegible]	31
Wheat	54	35	59	35

The discrepancies which are apparent in the above tables both for the stomata in similar regions and for different regions teach us that measurements must be used with caution and, beyond a very general purpose of distinguishing between one straw and all the rest, only when a sufficient number of measurements can be made, a caution which applies also to the other measurements given above.

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(14) Hoehnel gives 36-90 as Wiesner's figures (from Wiesner 1867). In Wiesner 1900 they are given as 12-16 as above quoted.

(13) The width [illegible] of the wall of the two adjacent cells. The length is "over all" — that is, includes the total thickness of the end walls.

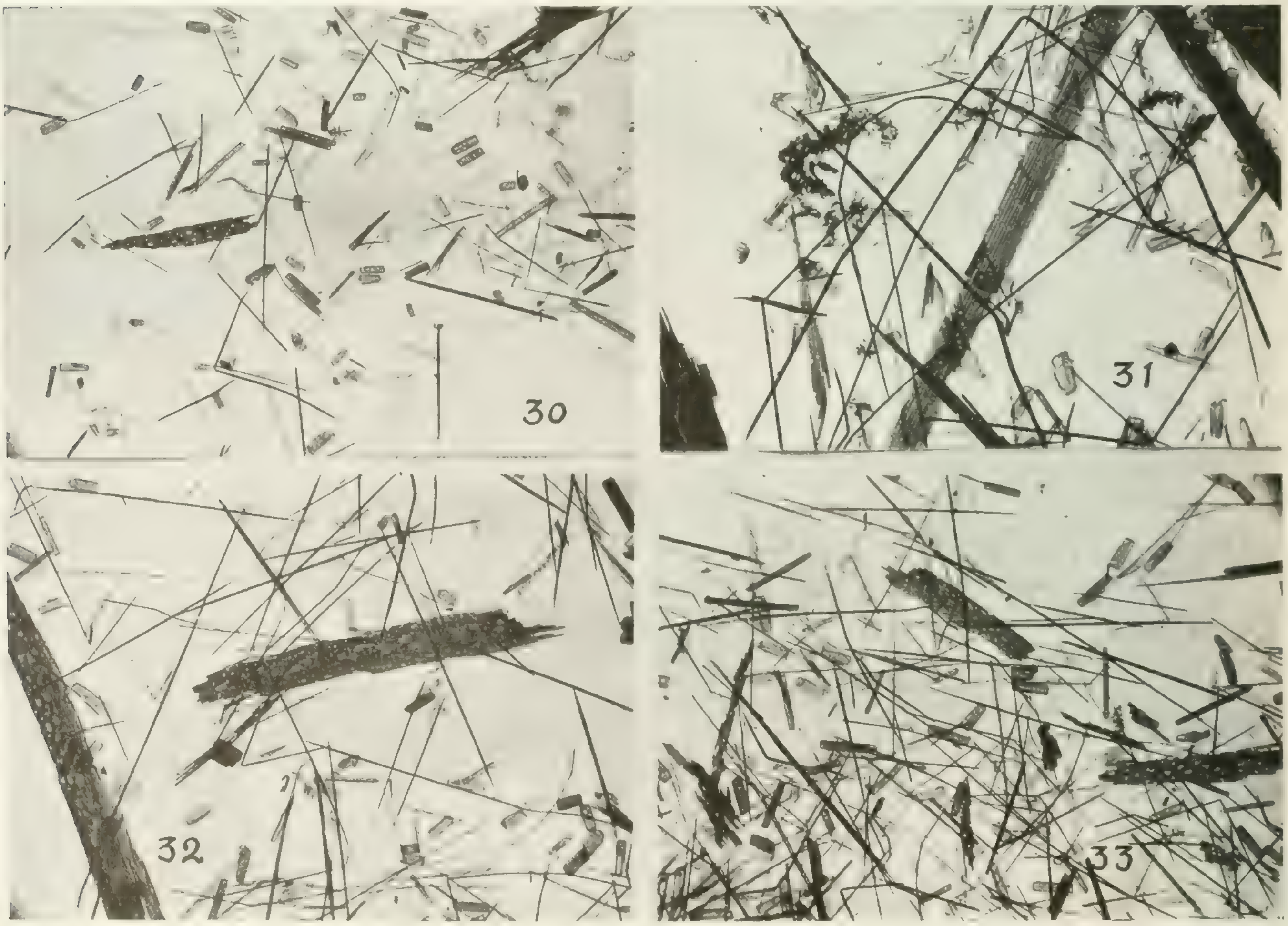
Keys based upon the foregoing characters.

A. Epidermal cells with strongly undulating walls, at least toward the sides of the stomatal zones
.. ..leaf-sheath epidermis upper part.
  Walls along the middle of stomatal zones thin and straight .. ..oat
  Walls of nearly the same thickness and degree of sinuosity through the whole stomatal zone.
  Sinuosities very irregular, stomata very broad (about 35 microns) crown cells present .. ..wheat
  Sinuosities regular, crown cells absent.
  Stomata with average width of about 50 microns .. ..barley
  Stomata wider, average width of about 56 microns .. ..rye.
B. Epidermal cells with straight, thick and only slightly undulating walls, or straight
.. ..epidermis of internode.
  Crown cells present, stomata very wide (34 microns).. .. ..wheat
  Crown cells absent.
  Wall straight .. ..oat
  Walls slightly undulating.
  Cells 15—18 microns wide, walls very slightly undulating, stomata small .. .. .. .barley
  Cells 18—22 microns wide, walls slightly undulating, stomata large .. .. rye

It must be admitted to be difficult to apply the above criteria, but they seem to be the only ones available. It is more difficult to distinguish rye and barley, if one makes use only of the above marks, though easy to separate them from oat and wheat. The following paragraphs will however show that rye and barley are easily separable by other characters.

The preceding description of the epidermis does not include the epidermis of the inner face of the leaf sheath, that namely which lies in contact with the surface of the stem (internode). Although in most regards the structure is very uniform in all the straws there are certain differences which stand out prominently. In general, the walls of the long cells are very thin and straight, there being no suggestion of undulations, and they are very similar to each other in all the kinds of straw. The stomata and the dwarf cells however are distinctive.

The dwarf cells in wheat and rye are for the most part in the form of minute trichomes (figures 29 e-f). They are three or four times as numerous in rye than in wheat, and are so small that it requires either microscopic observation, or a sense of touch equal to that of the tip of the tongue to detect them. For this reason the latter method has been indicated in a previously given key. They are absent from the oat.

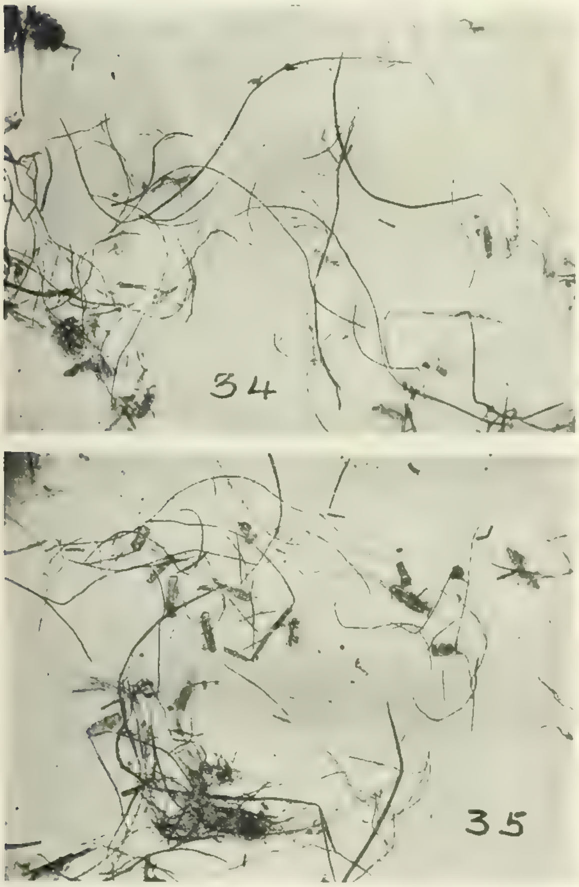


Figures 30-33.- Maceration products of barley, oat, rye and wheat resp. x 23.

The stomata in rye and wheat (figure 29, c, d) are similar in that the guard cells taken together, are as broad as the long cells where they articulate with the guard cells, while in the oat and barley (figure 29, a, b) they are usually much narrower. In barley the fore-pore (the vestibule, or outer entrance) is small and well marked, while in oat it is not. Summarizing in the form of a key we have a

Key based on the characters of the inner epidermis of the leaf sheath.

A. Guard cells as wide as long cells. Minute trichomes present:
  Stomata large (60—70 microns long) . . . wheat
  Stomata small (about 50 microns long) . . . rye
B. Long cells wider than the guard cells; no trichomes in oat.
  Vestibule short and narrow, rectangular (figure 29a) . . . . barley
  Vestibule nearly as long as the guard cells (figure 29b) . . . . oat



Figures 34-35. — Fibers and other maceration products from straw-pulp papers. Figure 34, oat; figure 35, wheat. x 20.

In studying the stomata in the inner epidermis of the leaf sheath, it is necessary to observe the precaution of excluding those along the thin, papery margin, as here they are narrow and hardly characteristic.

In evaluating these measurements, too much weight must not be attached to the averages. The short and slender fibers (6-10 microns in diameter) are reduced in number at least they are not to be readily found in bleached pulp, so that the character of the pulp is determined by the survival of the longer and the thicker (10-30 microns) fibers.

2. The mechanical tissues (fibers). (Figures 30-33).

The mechanical tissues are made up of bast fibers composed of single cells with thick walls, and gradually tapering toward either end. The ends of the fibers are usually abruptly truncated by an oblique wall, or may be very blunt or even bifurcated.

There is little uniformity in length, as can be judged by inspecting the figures herewith (figures 30-33), and the thickness of the wall varies accordingly.

Table of fiber length (in millimeters).

	Number of counts	Stem max.	Stem min.	Stem ave.	Leaf sheath max.	Leaf sheath min.	Leaf sheath ave
Barley . . .	40	1.5	0.3	0.9	1.7	0.5	1.0
Oat	110-40	4.6	0.6	1.8	1.9	0.5	1.2
Rye	40	3.3	0.7	1.8	3.9	0.6	1.3
Wheat	5--20	2.4	0.7	1.6	1.7	0.5	1.2

In making the above measurements, certain long cells found in the leaf sheath were purposely avoided. These are the cells (some of which are marked 1, in figure 25), which occur along the ventral (upper) edge of the bundles and are especially long and thin walled, the walls with minute pores. Preparations were made so as to include these fibers only, excluding as far as possible the fibers from between the bundles and the lower epidermis. The lengths of the longer isolated cells (some are quite short) are:

Barley	about 1.7 mm.
Oat	5 to 8 mm.
Rye	about 4 mm.
Wheat	2 to 4.5 mm.

That is to say, these fibers, or rather fiber-like cells, are roughly twice as long as the true fibers in barley, and three times as long as in others, reaching the greatest length in the oat. They are rather readily found in paper pulp, forming but a small fraction of the whole.

An interesting and theoretically important question always comes up in regard to fiber length and its relation to position in the plant . Specifically stated, it is to be expected that the long internodes will have longer fibers than shorter ones? or will taller straw have longer fibers than shorter ones?

Rye is the tallest straw. The average length of fiber is little if at all greater than in wheat and oat. Measurements of fiber length for the terminal internode in rye, this internode being the longest, showed that the longest fibers were about 1.4mm long, whereas in the lowest basal internode they were 2.3mm long. There seems therefore to be no direct relation between length of straw and length of fiber.

It is of course very difficult to apply fiber measurements to pulped straw, since the working and the softening effect of the chemicals used result in bending and twisting of the fibers (figures 34 and 35). For critical determinations therefore, it is on the whole advisable to depend on the characters afforded by the epidermal cells.

These, together with wood vessels (tracheids) and parenchyma cells are always to be found in varying numbers, and more or less distorted, according to the length and character of the chemical treatment which may have been used. But of all the elements, the epidermal cells are the most resistant, and hold their original characters the best on account of their thick walls.

3. Xylem, phloem, and associated cells; parenchyma.

The impression is scarcely to be avoided that the structure of the straws of the various grains is remarkably uniform, a result to be expected from what we know of the general homogeneity of the group which they represent. This is especially true of the tissues which we have not examined in detail for differences, namely the tissues of the fibro-vascular bundles and parenchyma. Only the most general statements may be made with safety, and these do not lead very far. For example, we may say that in general the stature of the cells of all tissues is in barley (figure 30) less than in the other grains, and we have seen evidence of this in the measurements already given. Beyond this, only extreme minuteae, such as the shape and size of the pits in the wood (xylem), seem to offer any appreciable differences, and these are of very uncertain value. It would seem that, from the practical point of view, with the purpose in mind of seizing on differences which can be made use of for identification without too great difficulty, the features which have been presented above will meet the need.

The Chaff, (Glumes and palets.)

In the preceding account there has been no attempt to give any description of the chaff. This term is a loose one and includes two kinds of chaff, that which immediately encloses the grain (grain-chaff, palets) and that the glumes which subtends the grain with its grain-chaff. This distinction may be readily understood by a comparison of oat and wheat. In the oat the grain-chaff (palets) permanently invests the grain, so that after threshing, the "grain" consists of the grain proper plus its chaffy covering of two parts, one larger (outer palet) inclosing the grain, and the other smaller, (the inner palet). The grain of wheat, on the other hand, shells out of the grain-chaff, in which respect rye behaves similarly. Some varieties of barley are like the oat, differing only in the fact that the grain-chaff is firmly attached to the grain. (Harlan, 1918). The structure of these various kinds of chaff differs very widely, so that a full account of all the details would occupy much space. We may note particularly the thin papery character of the inner palet in wheat and rye. Inasmuch as the contribution of chaff to straw is in any event very small, such an account is unnecessary. At the same time, since a certain, if small, amount of chaff is bound to remain attached to straw, and hence may be found in paper, although in exceedingly small proportion, it is advisable to indicate the general character of the structures which may be found.

In addition to the chaff, the rachis or that portion of the steam which bears the grain, will contribute a similarly small proportion to straw pulp. The rachis presents equally special conditions of structure, and would call for much detail of description. For this reason also, the following summary of structural characters is confined to very general terms.

Barley. The chaff consists of slender loose parts (glumes) and the bead of the outer palet (lemma). Both palets would be included in straw of hulled varieties. Numerous very thick walled trichomes, strongly oblique in form, giving the characteristic roughness of the head of barley. The trichomes of the inner or upper face of the beard are small and thin walled. Cells resembling crown cells occur near the base of the glumes. Crown cells occur locally in small numbers near the apex of the outer palet (lemma), which when adherent, contribute but little to pulp.

In all the cereals according to Hohnel (1875) the hypodermal cells (bast cells immediately beneath the epidermis) of the thick palets have teeth which articulate with corresponding depressions in the epidermal cell walls, and I have verified this. I have not found this condition in the beard.

Oat. Chaff consisting normally of glumes only. These are thin and leaf-like. The epidermal cell walls are wavy except in the thin papery marginal regions, the cells themselves much shorter than in the leaf. The bearded varieties will contribute trichome cells.

The palets of unfilled grain and of course an occasional filled grain will find their way into pulp. The epidermis is very sinuous and thick walled. There are a few crown cells, which are evidently undeveloped trichomes. They are distinct in appearance from those of wheat because of their somewhat irregular or oblique form. They are quite infrequent. Short, very thick walled trichomes on the outer palet and, along the fold of the inner palet, very numerous trichomes which can be distinguished by their lack of obliquity, standing out as they do at right angles (or nearly so) to the folded edge whence they spring.

Rye. Glumes and palets, with beard, constitute the chaff. The glumes and outer palet are similar in structure, characterized chiefly by large thick walled curved trichomes placed along the fold. The inner palet papery, the epidermal cells thin walled except toward the base, and thin walled crown cells numerous. These are readily distinguishable. The walls of the epidermal cells, especially those between the stomata very sinuous.

Wheat. Glumes and palets are the chaff. Very thick walled epidermis and trichomes characterize the glumes and outer palet. The thin papery margins of the inner palet has numerous rather slender trichomes arising from cells, which, as such, are very numerous and have the same appearance as those of the leaf.

The dwarf cells in all the foregoing generally consist as elsewhere of a larger crescentic thinner walled cell and a smaller very thick-walled cell. More exceptionally the dwarf cells occur singly, especially, for example, in the epidermis of the beard of barley. These do not in any event afford distinguishing characters.

It will thus be seen that crown cells, which would occur only in wheat straw pulp if the chaff were excluded, may otherwise be found also in oat and rye straw pulp. Even barley is not certainly excluded on this score. Trichomes, which would be found only in rye and wheat straw pulp, chaff excluded, may otherwise be found in all. The chief purpose of these additional notes therefor is to show the necessity of close study in the event that strict identification is desired.

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FALL PAPER CONFERENCE PLANS.

Chicago, Ill., Oct. 17.—Following the decision of the Salesmen's Association of the Paper Industry to hold the semi-annual meeting of that association during the Fall Business Conference of the paper industry at Chicago, the Chicago members of the association have been rushing plans to make this a notable meeting. The date has been definitely set for Nov. 1 at the Drake Hotel, and following the men's meeting there will be entertainment which will include the ladies attending the convention.

President H. H. Reynolds of the Salesmen attended the preliminary meeting with twelve salesmen of the Chicago district, including J. L. Fearing, vice-president for the Chicago distriict, and George K. Gibson, former president.

All meetings of the Salesmen's Association will be held in the Grill Room, and the meeting will be called to order promptly at 11 o'clock, instead of 11.30 as originally suggested. This will be the business meeting of the association, and at 12 o'clock Dr. Craig Stewart, the chaplain of the Association, will make his address. At 12.30 there will be a luncheon, followed by a formal program at 2 o'clock. R. S. Kellogg, secretary of the News Print Service Bureau, will discuss import conditions, and other speakers will be selected to discuss the financial situation, and the advertising and general business conditions. At 3.30 the meeting will adjourn for the social feature, which will be a reception to members and their ladies. There will be music with dancing until 5.30 or 6 o'clock.

This is the latest development of the plans for the Chicago business conference which now promises to be of the greatest importance to the industry. Many of the speakers have been selected, and plans are going forward rapidly for the closing of details for the convention. The holding of the symposium in the spring, as a cross section of the industry from the viewpoint of the various manufacturers, was met with such favor, that it was decided to extend the idea to the entire industry for the fall conference with the manufacturers, merchants and consumers all represented.

The merchants' side of the program has been completed by the acceptance of the invitation to speak by O. A. Miller, of Columbus, O., President Edward F. Herrlinger, of the National Paper Trade Association, having been announced earlier as the other of the two merchants on the program.

The combined programs follow:

American Pulp and Paper Association.

Program of the Third Fall Business Conference of the American Paper and Pulp Association. The Drake Hotel, Chicago, Ill. General subject: "The Paper Industry as seen by manufacturer, merchant and consumer." Thursday, November 3, 1921.

10.30 a.m.—General session of American Paper and Pulp Association. Addresses by representatives of manufacturers of paper, merchants and consumers.

1.00 p.m.—Joint luncheon with National Paper Trade Association. Addresses by two leading business men on the Paper Industry and business in general.

Program of Affiliated Associations of the Paper Industry during Fall Business Conference Week of the American Paper and Pulp Association, Chicago, Ill., November 1 to 4, 1921.

Tuesday, November 1.

10.00 a.m.—Book Paper Manufacturers' Association, Blackstone Hotel.

10.00 a.m.—Card Board Manufacturers' Association. Drake Hotel.

10.00 a.m.—Pulp Manufacturers' Association, Drake Hotel.

11.30 a.m.—Salesmen's Association of the Paper Industry, Chicago District, followed by luncheon and afternoon program, Drake Hotel.

2.30 p.m.—Cover Paper Manufacturers' Association, Blackstone Hotel.

7.00 p.m.—High Grade Paper Conference with Merchants, Blackstone Hotel.

Wednesday, November 2.

10.00 a.m.—Gummed Paper Manufacturers' Association, Drake Hotel.

10.00 a.m.—Board Section of the American Paper and Pulp Association, Drake Hotel.

10.00 a.m.—Waxed Paper Manufactures Association. Drake Hotel.

10.00 a.m.—Writing Paper Manufacturers' Association, Blackstone Hotel.

10.30 a.m.—Wrapping Paper Manufacturers Association, followed by luncheon and afternoon program. Drake Hotel.

2.00 p.m.—Woodlands Section, Drake Hotel.

2.30 p.m.—Sulphite Bond Division, Blackstone Hotel.

8.00 p.m.—Vegetable Parchment Manufacturers' Association, Drake Hotel.

Thursday, November 3.

7.30 a.m.—Breakfast of the Glassine & Greaseproof Manufacturers' Association, Drake Hotel.

10.30 a.m.—Third Fall Business Conference of the American Paper and Pulp Association.

Friday, November 4.

10.00 a.m.—Tissue Paper Manufacturers' Association, Blackstone Hotel.

2.00 p.m.—Toilet Paper Converters' Association, Blackstone Hotel.

Technical Section

REVIEW OF RECENT LITERATURE.

A-3. Isolating the Fibers of Seaweed ("Sugano", Phyllospadix Scouleri Hook). Fr. patent No. 510,373 YOHACHIRO HASHIMOTO, Japan, Sept. 4, 1920. **Papier,** 69 (Feb. 1921). The "sugamo" is harvested, dried if necessary, cut into pieces of suitable length, boiled for half to one hour on a 10 percent milk of lime (keeping it completely immersed by suitable means), removed from the lime, washed, and boiled for 20 to 50 minutes in a 1° Be′ sodium bisulphite solution. This treatment softens the peel, which can then be very easily separated from the fibrous portions of the stalk. —A. P.-C.

E-2. Use for Sulphite Waste Liquor. Fr. patent No. 505,264, Strehlenert, April 17, 1917. **L'Industrie Chimique,** viii, 26 (Jan. 1921). According to U. S. patent No. 1,149,420 the SO_2 of the waste liquor is converted into SO_3, and the calcium lignosulfonate is decomposed and precipitated by introducing air into the receptacle to raise the pressure and insure oxidation. In certain cases there is but very little free SO_2 and for the manufacture of alcohol it is necessary to add 0.1 to 0.5 per cent of sulfuric acid. This patent covers a special manner of adding this acid. When the digester is relieved to lower pressure, the relieved gases, which are acid, are led into an autoclave used for the decomposition of the waste liquor at a pressure of one atmosphere. The liquor is then heated, and the pressure rapidly rises above the boiling pressure at the prevailing temperature. At about 200° Cent. the SO_2 is immediately transformed into SO_3, and free sulphur is deposited. Sulphurous acid does not act alone to decompose the calcium lignosulphonate; for formic and acetic acids, and other organic compounds present in the gases also take part in the reaction. Atmospheric oxygen, or other oxidizing agent, may be introduced if it is desired to obtain a stronger acid mixture. — A. P.-C.

E-2. Deacidification of Sulphite Waste Liquors. Fr. **patent** No. 506,234, B. GRATZ, November 13, 1919. **L'Industrie Chimique** 400 (November 1920). Same as Br. patent No. 150,571, November 26, 1919. See Pulp and Paper, xix, 42 (Jan. 13, 1921).—A. P.-C.

F-2; M-0. Evaporated Feed and Overflow Regulator. Can. patent No. 209,100, THE GRISCOM RUSSELL CO., assignee of JOSEPH PRICE, both of New York City, N.Y., U.S.A., March 1, 1921. The inlet valve of the evaporator is controlled so as to maintain a constant level in the evaporator; and the discharge valve is automatically regulated in such a manner as to maintain the discharge at a uniform concentration, notwithstanding variations in the rate of evaporation. Claims allowed 17.—A. P.-C.

F-2. Eliminating Bad Odors from Soda Pulp Mills. Fr. Patent No. 506,629, ERIK SIXTEN SANDBERG and GUNNAR SUNDBLAD, Sweden, November 26, 1919. **Papeterie,** 109-10 (Feb. 10, 1921). Malodorous substances in soda pulp mills are formed in the following manners: (1) In the digesters during cooking, whence they escape with the vapors from time to time; (2) during evaporation of the liquor, the CO_2 and SO_2 contained in the hot gases of combustion reacting with the liquor to form various malodorous substances, mainly hydrogen sulphide and methyl mercaptan; (3) when treating the condensates obtained from (1) and (2) and when purifying the by-products obtained from the condensates. According to the present invention these substances are all collected in the one place and burned either in the recovery or the smelting furnace as follows: (a) malodorous substances formed as indicated under (1) and (3) are introduced into the smelting furnace mixed with the air that is supplied to the furnace; (b) the production of the malodorous substances formed as indicated under (2) is prevented as far as possible by concentrating the liquor in indirectly heated evaporators (i. e., without direct contact of the hot gases with the liquor) as far as possible, and then introducing the concentrated liquors directly into the furnace to furnish the evaporation and burn the residue. This makes it possible to maintain a higher temperature in the furnace, which in turn makes it possible to burn the malodorous substances. As the gases coming from the digesters, differs, evaporators, etc., contain a large amount of water vapor, which makes them very difficult to burn, they are first passed through a condenser which condenses a large part of the water vapor, and the remaining gases are then washed thoroughly with cold water, and the malodorous substances are condensed.—A. P.-C.

F-5. Extraction of Fibrous Material from Plants. Fr. patent No. 504,036, J. BOUDON, France, March 31, 1920. **Chimie et Industrie** VI, 206 (Feb. 1921). The material is treated with caustic soda in its nascent state (produced by means of carbonate of soda and lime, electrolysis, etc.) The action is quicker than with ordinary caustic soda, the consumption of soda is reduced by 30 percent the strength of the cellulose is not impaired, and the loss of cellulose is reduced 20 percent. The treatment of the plants varies with their nature and moisture content.—A. P.-C.

F-0. Pulp Process. Can. Patent No. 208,927, GONZALO JOSE BUSTAMANTA, South Hadley, Mass., U. S. A., March 1st, 1921. The vegetable matter is dried, immersed in cold water, separated into coarse fibers which are deposited in a receptacle containing quicklime, and treated successively with a cold alkaline solution, a bleaching agent, and a solution of volatile alkali. The bath thus formed is acidulated with hydrochloric and sulphuric acids, and the fibers are washed and comminuted. Claims allowed 4.—A. P.-C.

G-8. Machine for Dehydrating Paper Pulp. Fr. patent No. 511,007, JACOB LENGENHAGER, Austria, Sept. 17, 1921. **Papier,** 69-72 (Feb. 1921); **Monit. Papeterie,** 130 (March 1, 1921).—A. P.-C.

H-4. Hypochlorite Solutions by Electrolysis. Fr. patent No. 505,874, Pestolizza, Nov. 8, 1919. **L'Industrie Chimique,** viii, 59 (Feb. 1921). The conditions under which the electrolysis is conducted (circulation, temperature, concentration) are such that the products which are set free at the anode and at the cathode combine to form hypochlorites. The apparatus in which the electrolysis is carried out is divided into several cells by means of graphite plates arranged transversely which constitute the electrodes. Each of these electrodes acts on either side as an anode and cathode respectively. The cells communicate by means of openings in the graphite electrodes. The electrolyte is thus forced to follow a zig-zag path through the cells and issues as a hypochlorite solution.—A. P.-C.

H-4. Manufacture of Sodium Hypochlorite Solutions. Fr. patent No. 509,666, Société L'Air Liquide, April 19, 1919. **L'Industrie Chimique**, viii, 59 (Feb. 1921). The chlorine and the caustic soda which come from electrolytic cells are recombined to form hypochlorite. The liquor can very easily be cooled to prevent the formation of chlorates. To obtain a perfectly stable product in which the soda has been perfectly neutralized by the chlorine, a constant proportion of the chlorine formed, say 1/15, must be continually removed.—9. P.-C.

H-4. Improvement in Manufacture of Bleaching Powder. Fr. Patent No. 488,594, CASTNER-KELLNER ALKALI CO., LTD., and J. W. MOORE, January 24, 1918. **L'Industrie Chimique**, 88 (March, 1919). Slaked lime is treated with chlorine gas in a long slightly inclined cylindrical chamber, which is given a rotary motion. The inside of the reaction chamber is provided with bars which serve to raise the powdered lime and allow it to fall through the chlorine-laden atmosphere, so that the contact of the powder with the gas is much more thorough. The counter-current principle of absorption is utilized, and the chlorine is prevented from going through too rapidly by the inclination of the chamber. The chlorine is kept under a slight vacuum to prevent escape through the leaks which are almost sure to be present. -A. P.-C.

K-7. Improved Beater. Fr. patent No. 512,767, GRILEY-UNKLE ENGINEERING CO., U.S.A. **Monit.** Papeterie, 160-2 (March 15, 1921). The hood, back of the cylinder, is perforated to allow of the continuous removal of part of the stuff as soon as it is sufficiently beaten, without waiting for all the stuff to be completely beaten, which would result in some of it being overbeaten. The perforations in the hood are kept clear by means of a spray and also of blades slowly moving back and forth against the hood. A rag catcher is also provided.—A. P.-C.

K-10. Process for Sizing Paper. Fr. patent No. 512,124, RUDOLF LENDER, Germany. **Monit. Papeterie**, 129-30 (March 1, 1921). Artificial resins obtained by the polymerization of coumarone (C_8H_6O) and of indene(C_9H_8) are mixed with various saponifiable resins, such as colophony, rosin, etc., or with various saponifiable vegetable, animal, or mineral oils or fats and are then emulsified with alkalis, ammonia, or potassium silicate solution, the proportion of alkali determining the consistency of the resulting soap.—A. P.-C.

K-11. Screen for Rag Stock. Fr. patent No. 511,518, JOSEPH HENRY CHARVET, (Isere), France. **Papeterie,** 210-3 (March 10, 1921). The unbeaten half-stuff at a consistence of 0.2 percent is sent through suitably arranged blades or rods which stop the longer fibers, but allow the shorter ones to go through along with any dirt or impurities. These shorter fibers are then screened through one of the usual screens, thus eliminating the impurities.—A. P.-C.

K-12. Responsibility for High Newsprint Prices. W. J. PAPE, president of the Publishers' Buying Corporation, **Paper**, xxviii, 3 (March 23, 1921). Analysis of the causes which made the price of newsprint go so high in 1919 and 1920, showing that production was greater than it had ever been before, that manufacturers were doing all in their power to turn out as much paper as they could, and that the excessive prices were due to panic, speculation and hoarding on the part of the newsprint consumers.—A. P.-C.

K-12. Ball Bearings in Paper Machines. Papeterie, xliii (March 10, 1921). Brief outline of the advantages of using ball bearings on paper machines.—A. P.-C.

K-14. Instrument for Testing Tearing Resistance of Paper. Fr. patent No. 509,276, SIDNEY D. WELLS and ROBERT J. MARX, England, Aug. 12, 1920. **Papier**, 66-7 (Feb. 1921); also **Papeterie,** 110 (Feb. 10, 1921). The patent covers a device for measuring the resistance of paper to continuation of a tear that has already been started. The paper is firmly clamped in a suitable device and is pressed down against a dulled blade which has a sharp projecting point to start the tar. The blade is rigidly connected to a spring, and the pressure is transmitted to a suitable indicating or registering device. — A. P.-C.

K-14. Slitting and Rewinding Machine. Fr. patent No. 463,440, PAPETERIE DE NANTERRE, **Papeterie,** 7 (May 25, 1919), **Paper,** xxvii, 26 (March 2, 1921). Translation by A. Papineau-Couture. See **Pulp and Paper** XVII 826, K-14 (Sept. 25, 1919).—A. P.-C.

K-16. Extensible Wrapping Paper. Fr. Patent No. 508,293, ARLELL SAFETY BAG CO., U. S. A., Jan. 10, 1920. **Papeterie,** 160-2 (Feb. 25, 1921). The paper is made from one or more thicknesses of paper, creped in two directions and glued together with some waterproofing adhesive substance, such as asphalt, which remains soft and pliable.—A. P.-C.

K-18. Corrugated Cardboard. Fr. patent No. 509,319, W. G. BISKE, England. **Monit. Papeterie,** lii, 100-1, (Feb. 15, 1921). Same as Br. patent No. 145,854, June 29, 1920.—A. P.-C.

K-21. Tarred Roofing Paper. A., LAMBRETTE. **Papeterie,** xliii (March 10, 1921). Brief description of the equipment and process used industrially.—A. P.-C.

K-23. Reenforced, Waterproof and Translucent Paper. Fr. patent No. 513,139, MARIE LOUIS PAUL NOUETTE-DELORME, (Seine), France. **Monit. Papeterie**, lii, 129 (March 1, 1921).—The paper is reenforced by means of a more or less closely woven fabric of suitable material (vegetable or otherwise), or by means of a wire gauze, which is incorporated into the pulp during its transformation into paper before it goes through the presses. It is rendered waterproof and transparent by sizing with rosin, linseed oil, manganese resinate, and spirits of turpentine (in the proportions of 100 parts, to 80, to 15, to 25 respectively). This sizing process may also be used with non-reenforced papers.—A. P.-C.

K-23. Manufacture of Insulating Plastic Composition. Fr. patent No. 501,038, MOTTA, RUGIA and VILLAIN, March 31, 1920. **Technique Moderne,** 544 (Dec. 1920); **Papeterie,** 1130 (Feb. 10, 1921). Composition obtained by mixing a given quantity of unsized paper pulp with an equal weight of a mixture of equal volume of calcium carbonate and magnesium silicate; or else by applying the carbonate and silicate to a suitable elastic base such as paper, cardboard, etc., instead of incorporating them into the mass of the pulp.—A. P.-C.

K-23. Manufacture of Mottled Paper. Fr. patent No. 506,632, CHARLES CLARK ORCUTT, U. S. A. **Papeterie,** xliii, 205/9 (March 10, 1921.—A. P.-C.

(Continued from page 1070.)

as besides different means of occupying their men, nearly all mills have reduced also the working time, by introducing the 8 hour shift, which according to a recently adopted bill is to come legally into force on the first of next month in all the Belgian industries.

With the end of the holiday season, pleasure of business seems to have revived. Since a few weeks there is a steady improvement in the paper trade as in all industries generally, and although there have been no changes in prices of paper as they have existed during the past three months, most of the mills have now orders enough ahead to keep their machines running for more than a month.

Since the beginning of the year paper prices went down about 35 per cent. They are at present as follows, per 100 kg. and in francs:

Strawboard, 45-55; Ordinary wrapping, 80; Strong, 120-130; Butchers parchment, 150-165; News print, 90-110; Wood free printing, 205-225.

During the same period prices of pulp went down to a greater extent, they are now about as follows f.o.b. Antwerp, per 100 kg. in francs:

Mechanical, dry, 38-45; Strong sulphite, 60-65; Easy bleaching sulphite, 65-72; Bleached sulphite, 85-90.

The prices of pulp already show a tendency of going up again, owing to the renewed activity in the paper trade and to the reports that Scandinavian stocks are exhausted and pulp mills are still working at reduced output.

Generally speaking, prospects are decidedly optimistic and the prevailing opinion in authorized paper circles is that the market is likely to remain firm at least for the balance of the year.

A dark cloud on this bright horizon is the handicapping of the export trade, by the continually increasing number of countries which are putting, or advancing, protecting tariffs on imported paper. Till now, Belgian paper makers are not taking the matter very tragically, as they feel confident that the fiscal isolation to which former customers have decided, will induce the government to devise some reasonable form of protection, that will make it impossible to Germany to undermine the market in our own country.

FEW NEW PAPER MACHINES ORDERED FOR NEXT YEAR.

New York, Oct. 15.—Significant figures as to the future growth of the paper industry are made public by the American Paper and Pulp Association, which finds that only four new machines are scheduded for installation in the entire industry for 1922, as compared with the 53 machines being installed in 1921.

The record year of 1920, when such mills as the newsprint mills were producing at more than their registered capacity to meet the demands of publishers, was accompanied by the placing of contracts for much additional machinery. The year of 1921, however, with an influx of cheap foreign paper, in the absence of tariff legislation to protect manufacture in the United States, has seen contracts for little new capacity.

Figures just compiled show a total of 53 machines scheduled for this year, and only four for 1922. Of the new machines scheduled this year, eight are for newsprint, ten each for book and board, five for wrapping, six for writing, seven for tissue, two each for roofing felt, glassine and specialties and one for blotting. The 1922 installations are one for book and three for board. The increase for the two years over 1920 is largest in felts and building with 12.5 per cent, board being next with 12.4 per cent and book third with 11 per cent. Newsprint shows an increased schedule of 9.2 percent, tissue of 9, fine papers of 6.2 percent and wrapping of 4.7 percent.

NO PRIVATE PAPERS IN RUSSIA.

A big factor in the world's paper market conditions for many months past has been the abstention of Russia as a paper consumer. In normal times Russia imported large quantities of pulp and paper from Finland, Sweden, Norway and Germany. Her inability or unwillingness since the resolution to buy from these countries has been responsible in a large measure for their turning to the trans-Atlantic market where they compete with Canadian and American producers.

At the present time the Soviet Government of Russia is making extensive purchases of Finnish, Scandinavian and German paper. According to a report made by U.S. Consul Leslie A. Davis, of Helsingfors, Finland, and published in the current issue of the Washington Commerce reports, Russian purchases of Finnish paper and other commodities have amounted to 40,000,000 Finnish marks (normally about $7,600,000 in U. S. dollars). Russia, according to the report, is practically out of paper. Russian paper mills have ceased to operate. The Government has seized all stocks of paper, leaving but a limited quantity in the free market.

Private individuals get no paper at all. Theatres, opera houses and other places of amusement use old forms for tickets. Newspapers vary their circulation according to the paper supplies allotted to them, sometimes issuing small and sometimes larger editions.

Books for propaganda purposes are given the preference, and when their requirements are satisfied no paper remains for educational works. In Petrograd five daily newspapers maintain an existence in spite of the paper famine. In Moscow there are also five. All are government owned, there being no private newspapers in existence.

Next to Finland, Germany seems to be forcing the Russian paper market. "Large lots of German rotation and mouth-piece paper and different sorts of sheet paper were stored in the customs houses at Moscow," reports the delegate of the Finnish Paper Mill Association who recently returned from Russia and who is quoted by the American Consul. "Writing paper with German watermarks could be seen everywhere in the government offices. The German business men made satisfactory deliveries and the prices were very favorable. The Soviet representative has been staying in Berlin, where he made large purchases."

Ordinarily, Russia is capable of absorbing practically the entire export output of Finnish and German paper and the fact that Russian importations of paper from those countries are now resumed, with the probability of being progressively increased, indicates that there will be less Finnish and German paper for American buyers as time goes on.

Mr. William H. Parsons, President of Parsons & Whittemore, Inc., sailed from New York on the Munson Line's new steamer "Southern Cross" on October 1st, for Rio de Janeiro, Brazil. Mr. Parsons expects to visit the River Platte countries as well as Brazil.

British Trade News

(From Our London Correspondent.)

London, Oct. 8, 1921.—When the Prince of Wales visited Messrs. Wiggins, Teape & Co., Ltd., Devon Valley Paper Mill, at Hele, a film was made as he passed through the various departments. The film is now being exhibited to printers and others associated with the paper industry and it forms a most excellent advertisement for Messrs. Wiggins, Teape & Co., Ltd., who, at the chose of the show, usually extend a hearty invitation to those present to call in and inspect any of the firms' mills when in the vicinity of them.

How Government Methods Hinder Firms.

The necessity of business-like Government is amply demonstrated in the reports of some of the British paper mills and firms. As a matter of fact the present rule-of-thumb methods of the Imperial Goverment have been put in the scales and are found "wanting." so much so, "that the Wall-Paper manufacturers state that although it has been usual to pay their final dividend on the preference shares on November 1st. in view, this year, of the depreciation of stock values during the past year and the difficulty in assessing their reclaim from the State under the Excess Profits Duty, they have deferred consideration of this dividend until the completed accounts are presented. It will be recollected that under the Excess Profits Duty manufacturers had to hand over surplus profits made. In other words when they were making a decent profit and putting a bit by for a rainy day the Government grabbed all surplus money—and more than their share. Now reclaims are order of the day. The St. Neots Paper Mill Co. Ltd. have also issued the following announcement: "Owing to the fact that in the case of this company the year ending April 30th, 1921 is the last of the seven years fixed by the Government for adjusting Excess Profits Duty, and two or three important questions in connection therewith remain unsettled, the directors deem it desirable to postpone the issue of their annual report and accounts until these questions have been disposed of, but have decided to pay a second interim dividend of 2½ p.c. (free of tax) and enclose warrant therefor on amount of your holding." What would Canadians say if their accounts and annual report was held up by, say, the shortsightedness of the Canadian Government? They certainly would not take it lying-down like their British confreres. Since the close of the war England has been a land of waste and blunderers, and today mill owners do not really know where they stand with the Government and Labor elements.

Financial Reports.

Some of the mills are now announcing facts relating to their progress. John Dickinson & Co. are declaring an interim dividend of 2½ p.c., less tax, on their ordinary shares. The Burnley Paper Works announce a dividend of 9d. per the £1 shares. For 1919-20 a dividend of 35 p.c., free of tax was declared and in October 1920 a bonus of 100 p.c. in shares was distributed. The well-known firm of Messrs C. Davidson & Sons, Ltd., state that their disposal balance of profit for the year ending July 31st last, after making allowances for repayment of Excess Profits Duty, is £4,823 of which £2,209. 8s. was distributed per interim dividend in April last and the directors recommend that the remainder be disposed of as follows:—. (a) By writing off depreciation the sum of £1,000; (b) by leaving the remainder £1,613 18s. at the credit of profit and loss account. This year has been an abnormal year in every respect. At the commencement, in accordance with an agreement made between the Employers' Federation of Papermakers and the Workers' Unions, a large increase of wages had to be given. Towards the end of 1920 a steady falling off in business took place generally, which culminated later in a complete slump in the paper trade of the country. From these causes and from the coal strike the company has suffered considerably, but the directors consider that the results shown are satisfactory in face of the difficulties encountered. While regretting that they cannot recommend the payment of a further dividend, the directors believe that a better tone is evident in the trade, and having fully provided for the losses of the past year, they are hopeful that with care and strict economy improved results should be obtained.

The Exhibition at Toronto.

A certain amount of interest is being manifested in the Canadian National Exhibition, at Toronto. Messrs. John Oakey & Sons, of London, are exhibiting emery paper, glass and flint paper. Other are likely to follow.

Technical Section.

The British Technical Section of the Papermakers' Association has held a very successful conference in Edinburgh in the Heriot Watt College. Mr. Charles Baker (the chairman) presided and there was a good attendance. Several papers were read, one of which appears in this number in the "Pulp & Paper Magazine." But one of the great attractions of the conference was the limelight exhibition showing how the Canadians made newsprint. It opened the eyes of the British Technical men and they are now appealing for the film to be shown in Manchester and other centres. During the conference, Messrs. Bertram's engineering works were visited and the up-to-date methods adopted by British engineers in papermaking machinery were studied with interest. The conference was a great success, instructive, and Edinburgh was just the right centre for true Scottish hospitality.

Imports of Boards.

During the last couple of months there is a notable falling-off in the imports of boards from Canada. No doubt the demand is not great on this side, but still the market must not be lost sight of. The following show the returns for August—the latest return:

Millboards: Germany, 3,756 cwts.; Sweden, 6,510 cwts.; Norway, 3,415 cwts.; Finland, 3,348 cwts.; Canada, 6,240 cwts.; U. S. A., 486 cwts.

Strawboards: Belgium, 880 cwts.; Netherlands, 143,-263 cwts.; Germany, 201 cwts.; Sweden, 78 cwts.; France, 35 cwts.

Leatherboards: Finland, 380 cwts.; Sweden, 681 cwts.; Czecho-Slovakia, 240 cwts.

Cardboards and Pasteboard: France, 16 cwts.; Germany, 868 cwts.; Netherlands, 107 cwts.; Sweden, 11,-083 cwts.; Norway, 461 cwts.; Denmark, 474 cwts.; U. S. A., 563 cwts.; France, 4 cwts.; Italy, 6 cwts.; Switzerland, 24 cwts.

The Pulp Market.

The market for groundwood pulp is lifeless and the same may be said with regard to the chemical pulps market. It is realised that until the paper industry can get out of its present dormant condition there will be no great movement in pulps.

Prices are about as follows: Bleached sulphite, £20; Easy Bleaching (No. 1) £17. 10s.: Sulphite newsprint (strong) £16. 5; Unbleached Soda No. 1) £16. 5s.; Soda kraft, £14. 10s.; Groundwood (prompt delivery £4. 10s; Groundwood (dry) £8 per ton prompt delivery.

Chemical Research.

A significant remark appears in the paper "Fundamental Chemistry in Papermaking," by Mr. J. Macdonald, D. Sc., read at the Technical Section Conference. It is: "Germany, the United States, and Canada, are actively prosecuting chemical inquiry into papermaking problems. If the British industry is to maintain its place in the world's markets, it would appear unwise to neglect this avenue to progress."

We have always been told that the British paper industry can hold its own in the markets of the world. No doubt it can, but it wants to take a few examples from the countries named by Mr. Macdonald in chemistry. If the Technical Section is doing nothing else it is certainly opening up new "avenues" and placing the British paper industry on a higher, and more intellectual level. We are living in a new area; the principles of the Victorian days are over—we are now in an age of Science.

IMPORTANT DISCUSSION FOR FORESTERS.

Editor, Pulp & Paper Magazine.

The need for technically trained men to handle the many technical problems involved in the efficient utilization of forest products is becoming more and more generally recognized. The scope and character of the training which should be received by men planning to specialize in this field are discussed in the report presented at the Second National Conference on Education in Forestry and should be of interest not only to educators but to all wood users.

Since the entire subject is to receive further consideration at the annual meeting of the Society of American Foresters in Toronto next December, comments by your readers with particular reference to following points will be welcome:

1. What openings are there now and what openings will there be in the comparatively near future, in specific industries, for men particularly trained to specialize in the field of forest products?
2. Exactly what will be the character of their work?
3. Just what training will best fit them for it?
4. What salaries can they expect both at entrance and after several years' experience:
5. How can adequate opportunities for the training of such men best be provided?

Comments on these and related points may be sent to any of the undersigned, who constitute a sub-committee of the Educational Committee of the Society of American Foresters on the training of specialists in forest products.

Very truly yours,
Chairman, S.T. Dana,
Forest Commissioner, Augusta, Maine.
Hugo Winkenwerder, Dean,
College of Forestry, University of Washington,
Seattle, Wash.
O. M. Butler, Assistant Director,
Forest Products Laboratory,
Madison, Wis.

Where there is a brighter, warmer spot than in the sunshine we create for others? It is the secret of happiness.

PAPER TRADE BETTERMENT CONTINUES.

Evidences of betterment in the pulp and paper industry continue to multiply. American newspapers, the largest consumers of newsprint in the world, are daily increasing their use of paper from the low level of the past few months. A decided expansion in daily newspaper advertising, much of which is of course merely seasonal, is apparent and is likely to continue at any rate until the close of the year. The 40-page daily and the 120-page Sunday paper, which disappeared altogether early in the Summer, are again in use. Newspaper circulation, dormant for months, has started to grow.

One New York daily reports an increase of 100,000 over last year. The Chicago Daily Tribune and its auxiliary publications are reported to be using 30 tons more newsprint daily than is being produced in their Canadian mills, which normally exceeds their requirements. The "United States Service," a business men's weekly barometer, sent out from Washington, after months of "bearish" advice on the paper situation, is now advising its clients to purchase and hoard paper against lessened supply and higher prices which it foresees in the near future. The prices of pulp of all grades and of other paper making materials are stiffening. Mills idle for some time are coming back into operation.

While these developments still leave the industry some distance from the peak of activity it enjoyed a year ago they are looked upon as indicating a much more stable condition of trade in the near future and will, no doubt, if they continue, have a bearing when it comes to deciding upon next year's prices which may not be much before the end of November.

In regard to European paper and its effect on the American market, neither American nor Canadian producers look upon it as a really serious factor. They recall that normally this continent is not a natural market for European paper and that even as recently as a year ago, such imports were negligible. They assert that in the paper business conditions are subject to reversal almost over-night and say that it would not be surprising to see European paper disappear from the American market with the same suddenness with which it made its appearance a few months ago. A revival of paper consumption in Europe, which many believe to be imminent, would, they say, go a long way towards bringing it about.

GIBBS-BROWER COMPANY OPEN ENGINEERING DEPARTMENT.

Gibbs-Brower Company, 261 Broadway, New York City, who are well known in the Canadian pulp and paper field as general agents for American and European paper and pulp mill machinery and as pulp and paper mill brokers, announce that they have organized an engineering department to enable them to take care of the needs of different mills for special machinery. They are prepared to investigate any problem of manufacturing or machinery which the mills may have and give them a report on this without any obligation whatever. They will then invent, design and build suitable equipment to take care of requirements. For this work they have associated with them a consulting engineer of high standing and broad experience in paper working machinery and paper products.

"The best time to hold on is when you reach the point where the average fellow would quit."

PULP AND PAPER NEWS

The thirty-fifth annual convention of the United Typothetae of America opened at the King Edward hotel, Toronto, on Monday last. Monday's program comprised a complimentary dinner to the U.T.A. secretaries, a conference of secretaries, and a demonstration of the local Typothetae Bureau services. The business convention opened on Tuesday, and included in its proceedings were meetings of the Educational Round Table and the various branches and divisions operating under specialized departments. Mr. William J. Eyon of Washington, D.C., assisted by the five vice-presidents, is presiding over the convention, which is still in session as this goes to press. The Toronto representation is headed by Mr. Douglas Murray.

An especially gratifying feature of this year's convention of the Typothetae is that it is on an exceptionally large scale. In other respects, too, it bids fair, by the time it has closed, to be pronounced the most successful in the history of the organization. Several hundred of delegates are in attendance, representing the 5,000 members of the organization. The Typothetae of New York City have sent 100 delegates to the convention, and other centres are represented by a delegation of generous size.

The United Typothetae of America was formed for the purpose of raising standards in the printing industry. It has dealt with many problems affecting it, and branches of the organization have been established on all the large centres of the continent. It is announced that it will continue its work along these lines and will endeavor to lay such plans as will create a demand for more and better printing. In addition to its membership of approximately 5,000 in Canada and the United States, it posseses members in Mexico, Australia and South Africa.

What gives unusual interest to this year's convention of the Typothetae in Toronto is that it is being held in that city while the strike in the printing trade, which has already lasted nearly five months, still continues and with no obvious signs of its early termination. The policy on the side of the employing printers is being shaped by the Defence Committee of the Toronto Typothetae of which Dr. S. W. Fallis, steward of the Methodist Bookroom, is chairman. The men's organization, Local No. 91, International Typographical Union, is taking advantage of the assembling of the Typothetae in convention to issue some very effectively-written and strikingly-printed advertisements in the Toronto papers,giving reasons for the men's demand for a forty-four hour working week, which according to one advertisement, will result in (among other good things) "further improved printing at no added cost". Of course it is on this very point that the Toronto Typothetae join issue with the strikers.

Mention was recently made in these columns of the action entered by the Ontario Provincial Government against the Russell Timber Company, of Port Arthur, Ont., in respect of reimbursement for timber alleged to have been wrongfully taken by the latter. The case has now been settled out of court, the terms of settlement including the payment into court by the Company of a sum of $37,500 together with interest to date from the date of the Timber Commission's findings, and the sale by auction of 2,000 cords of pulpwood, from the proceeds of which sale, $17,500 is to be paid to the Government and the balance to be retained by the Company.

The Howard Smith Paper Mills, Ltd., which recently declared the regular quarterly dividends of two per cent. on both common and preferred stock, has opened its own pulp mill at Cornwall, Ont., which step, it announces, will enable it "to control the development of our product from standing timber to the finished sheet of paper." The Company adds: "The mill itself is of the most modern construction, and contains the last word in equipment necessary for the production of a standardized quality of high-grade pulp. In addition to the mill, our own electrolytic bleach plant will soon be producing our own bleach. A further addition is made in a filtration plant, which will ensure for the production of Beaver S papers, a purity of water supply unsurpassed in quality. The very source of our water, the St. Lawrence river, is one of the purest courses of water in the world for this grade of stock."

A large area of pulp timber is being offered for sale by tender by the British Columbia Government. It is situated near Prince George, B.C., and a proviso attached to the sale is that at least $350,000 must be expended within three years of purchase.

It is believed that the United States Commission to visit Canada respective what is termed the pulpwood "embargo" will shortly be appointed by President Harding. Sir George Foster, the out-going Minister of Trade and Commerce, gave assurances, before quitting office, that everything should be done to facilitate the work of the Commission. But it seems that the conferences which the Commission will hold in this country will be with representatives of the Dominion Government. It is certain that the Provincial Governments, in Ontario and Quebc, are the bodies most intimately concerned with the question. For it is regulations of the Governments of those Provinces which prohibit the export of pulpwood in unmanufactured form from Crown lands situate therein. In any case there is a strong sentiment that these Provincial regulations should not be abrogated, or even modified, in the circumstances in which Canada finds herself today in the matter of the depletion of her forest resources.

The fourth annual meeting of the Canadian Paper Trade Association was held in Montreal on Wednesday and Thursday of last week. The meeting was important and interesting and the attendance was gratifyingly representative.

Mr. John Wolstenholme is visiting Canada in the interest of Charles Walmsley & Co., of which he is managing director.

Mr. A. L. Dawe, secretary of the Canadian Pulp and Paper Association made a business trip to Chicago this week, when he delivered an address.

UNITED STATES NOTES

According to a bulletin from the Washington, D.C. headquarters of the National Geographical Society, Siam, as indicated by the recent shipment of paper making machinery from the United States, is preparing to enter the paper manufacturing field. The plant shipped to Bangkok is intended for experimentation with such raw materials as rice straw and native grasses and, in the view of the Geographic Society, this progressive step is more characteristic of Siam's civilization than the white elephants or little boys smoking big cigars popularly associated with the Asiatic kingdom.

Railway proposals to increase transcontinental freight rates on lumber and forest products moving from Oregon, Washington, Utah and Idaho to El Paso, Texas, by 25 per cent, were held not justified in a finding of the Interstate Commerce Commission. The commission declined also to consider a request for an increase in lumber freight rates from intermediate points, amounting to 33 1/3 per cent. The rates never have been in effect, having been proposed by railroads June 1, and suspended by the commission.

The Los Angeles Times in a recent issue carries a report from Perth, Australia, telling of the making of a good grade of paper from the common eucalyptus tree, the result of successful experiments in West Australia. Various state governments and private interests, the report says, have contributed upwards of $100,000 for the erection of plants, for the installation of machinery, and for further investigation into the matter.

Many of Chicago's printing firms have indicated their belief that there will be an increased demand for printing with the approach of the Christmas season. Quite a little advertising matter is expected by the printing trades in Chicago and as but few of them have any amount of paper stock on hand, this demand should be reflected in increased paper orders.

U. M. Waite, president of the Argo Paper Mills Company at Gloucester, N. J., is personally supervising structural changes in the old Gloucester plant. The mill is being remodelled for the production of newsprint for the "North American" and "Record," Philadelphia dailies, and present plans call for the installation of machinery by mid-November so that operations may be begun at the earliest date possible.

The Calco Chemical Company has secured the ser ices of Charles E. Foster to take charge of its New England sales department. Mr. Foster, who has had wide experience in both mill and sales work, has assumed his duties at the Boston office of the company where a stock of the entire line of Calco colors is carried for the convenience of the New England trade.

Recent changes in personnel announced by the American Writing Paper Company, Holyoke, Mass., have brought to that concern's forces R. P. Wood, formerly of the R. P. Wood Advertising Agency, Chattanooga, Tenn. Mr. Wood will be located in the Philadelphia territory where he will co-operate with the Garrett-Buchanan Company, the Philadelphia Eagle-A service department of general service of the American Writing Paper Company, has been transferred from Philadelphia to Albany.

Germans in South American countries are said to be selling sulphite bond paper for about 6 cents a pound. Most of the high grade companies in America can sell the same material there at no less than 11.5 to 12.5 cents a pound. This news is contained in a letter received by a large New York concern from a correspondent in Rio De Janeiro.

The Babbitt-Kelley Company, Inc., recently organized in Vermont to engage in the manufacture of paper, has acquired th emanila mill and manila manufacturing department of the Robertson Paper Company, a firm that has operated in Bellows Falls, Vt. for the past twenty years. Frederick H. Babbitt, its head, has gradually improved the Robertson Company's equipment during the term of his control. He is president of the new Babbitt-Kelley Company, and associated with him is Herbert T. Kelley who is secretary-treasurer.

J. W. Quimby has been appointed Eastern sales manager for the Bardeen Paper Company, of Otsego, Mich. An office has been opened by Mr. Quimby at 200 Fifth Aenue, New York, from which he will handle coated and uncoated book and lithograph paper, lithograph blanks, post-card and translucent, together with clay-coated boxboard.

The Valatie, N. Y. property known as the Centennial Mills has been taken over by Mr. Robert P. Richmond, who will again take up the manufacture of light straw wrapping paper for the export and domestic use, producing the same quality paper he has made for over fifty years.

The recently failed American Paperboard Company, Inc., successor to the National Folding Box and Paper Company, of Albany and Ballston Spa., N.Y., carried liabilities of $193,759.69 as against assets of $159,779, according to the schedule in bankruptcy filed with the Federal court in Utica, N.Y. The business of the National Folding Box and Paper Company was taken over by the American Paperboard Company, June 16, 1920, with a capital of $250,000.

Among Canadian mills which have recently increased their capacity, mention should be made of the Kinleith Paper Mills, whose plant at St. Catharine's Ont., has been increased in capacity to twenty-five tons a day of book and writing papers. The concern has added twelve new dryers and another set of press rolls to its No. 2 machine.

A pulpwood loader, owned by Mr. C. J. Bliss, engaged in loading a steamer with pulpwood in Nipigon Harbor, was destroyed by fire, Oct. 6.

Members recently elected by the Technical Section of the Canadian Pulp & Paper Association are: William J. Bolger, Brompton Pulp & Paper Co.; George Robertson, Beaver Board Co., and Herbert Kennedy, Ru-ber-oid Felt Co.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 15th Oct. Progressive betterment has continued to describe the condition of the paper industry, in nearly all its lines and branches, during the past week. There were some who were inclined to view the improvement which is now in progress, when its first signs were manifested some weeks ago, as a mere "flurry"—a "flash in the pan", as it were. But from the outset, that was not the view taken of it in these columns. Its very slowness, in its early stages, coupled with the fact that it was remarkably wide in its scope, seemed to point to the fact that it was destined to be sure. Moreover, this view received confirmation from the circumstance that the betterment of conditions in the paper industry was coincident with an improvement in general commercial conditions. For stress has, in these columns, persistently and consistently been laid on the fact that, until business generally picked up, no reliable betterment could be looked for in the paper industry, and if and when it did exhibit signs of improvement, as part and parcel of a general trade revival then such improvement would be marked by stability, if also by a certain slowness. At the same time, while it was essential, in order to acquire the needed stability, that the paper trade revival should accompany and form part of a general trade revival, it was obvious that there were reasons such as the depletion of stocks, in the hands of consumers and jobbers, in so many lines of paper, which would cause the betterment in the paper industry, once it set in, to assume larger proportionate dimensions than the betterment in many other lines of commerce and manufacture. Such reasons are, plainly, operating now. Nearly all industries are showing signs of climbing upwards again to the normal standards of a sane and stable commercial life — and the paper industry is climbing faster than many.

Buying generally is by no means of the "hand to mouth" description which characterized it a couple of months ago. But, even now, in too many lines, orders are not as satisfactory as they should be in point of magnitude. One realizes that, just here, the human equation enters into the matter. The reason why orders are not larger is because absolute confidence in the market has not yet been fully regained. In connection with this question of confidence it may not be amiss to emphasize what was said last week with regard to under-cutting of prices by jobbers. The condition of stabilization, which is so eminently desirable, is essential to the full restoration of confidence, and loyalty, on the part of wholesalers, to re-sale prices, would do a whole lot in the direction of bringing about stabilization.

PULP. The pulp market has displayed a little more liveliness lately. An increasing firmness in prices also gives ground for a little more satisfaction. There has certainly been some stiffening in the demand for chemical pulp. Some consumers are showing a tendency to lay in stocks for future use. Quite a demand has been exhibited for kraft pulp at $65 a ton.

NEWSPRINT. The demand for newsprint is expanding. The reason for this is to be found in the improvement in general trade conditions which is making a larger demand on newspaper space for advertising, and the approaching electoral campaign will do something considerable to increase the consumption of newsprint. Were it not for the uncertainty as to future price, as to which something was said last week, and which will probably cease to manifest itself ere long, there would be less hesitation in placing orders of magnitude As it is, consumption of newsprint is unmistakably on the increase—and will be sharply so before many moons. On the whole, the newsprint industry of Canada has great cause to pride itself on the manner in which it has passed through a critical period of acute depression. As Mr. George H. Mead, president of the Spanish River Pulp and Paper Mills, Ltd., justly said at the annual meeting of the directors of that Company, the other day, Canada is fortunate in having for one of its basic and greatest industries the newsprint paper business. It has operated throughout the period of depression, at a production of something like eighty per cent. capacity—a larger percentage of production than any other industry comparable with it in size.

BOOK PAPERS.—The improvement in the demand in book papers is now a clearly defined one. Particularly is this improvement noticeable as regards the superior grades. Orders are coming in in greater numbers than for some time, and many of these are considerably larger in individual size than had formerly been the case for a long while. Many orders are for immediate delivery which seems to argue that stocks have become unusually depleted. If this be the case (and there are many reasons for judging that it is) then the outlook in the near future must be regarded as highly encouraging. It is said that present prices will hold.

COATED PAPER.—Manufacturers are increasing their output of coated paper in response to an increasing demand. The outlook is considered to have distinctly improed.

WRAPPING PAPERS.—The demand for wrapping papers continues to expand. In its kraft aspect, the situation is excellent. More than once, recently, the writer has heard the representative of one large mill emphasize the necessity of ordering now and avoiding the Christmas rush. The outlook for domestic trade is good, and the prospects for export trade are decidedly tinctly improved.

TISSUES AND TOILETS.—Tissues and toilets are still in fairly satisfactory demand. That for tissues, which is on the increase, is significant as showing evidence of a betterment in general trade conditions. For it means that trade in textiles and so forth is looking up. Of the same satisfactory nature is the volume of trade that persists in paper boxes.

BOARD.—The board situation is reported as being a good deal better now than it has been for a long time. Orders are coming in much better and this has had the effect of increasing the demand on paper stock and sending up the price of the latter. A higher price for board is pretty sure to obtain shortly. The better demand for all grades of waste paper which has been exhibited, and of which mention was made last week, continues to be exhibited. Altogether, it looks as though there should be some good business doing in the ensuing months, as regards board and paper waste.

NEW YORK MARKETS.

New York, October 15.—(Special Correspondence).

Activity in the paper industry is steadily on the climb, and business has undergone further expansion this week. Practically every report received, whether from manufacturer, jobber or dealer in papermaking raw material, is of an encouraging character, and the market seems to be getting into a livelier condition each day. Mills which have been running at greatly reduced schedule for many months are gradually increasing their operations until a fair percentage are now working full, and a bullish feature of the situation is that manufacturers are finding a ready outlet for virtually all the paper they are producing. Information gleaned from the jobbing trade is generally that consumers are placing orders for the various grades of paper in by far larger number than in a long time and that the volume of orders is constantly increasing. Printers, publishers, paper box manufacturers, and numerous other large consumers of paper and paper board are once again replenishing stocks, being attracted into the market both by the turn in the trend of paper prices from downward to upward and also by the necessity of larger supplies.

Improvement in the book paper trade during the past few days has been one of the outstanding market features. Book paper mills are said to be obtaining a large volume of business than in a lengthy period, and the gradual upswing in quotations is bringing buyers more actively into view, as would be expected under the ruling circumstances. There is little question that the downtrend in book paper prices up to a short while ago kept many publishers and printers from buying, and now that mill quotations are firmly on the rise, consumers are flocking into the market to lay in stocks and to otherwise cover requirements. A well known mill agent in New York who represents several of the largest producers of book paper in the States yesterday asserted that the last two weeks have been the busiest he has experienced this year, and that the amount of business he had done in this time easily exceeded that of a two-months' period during the summer. This is cited as illustrating how matters in the book paper trade have improved.

Prices on book papers are higher. A majority of mills are quoting 6.25 cents per pound on machine finished book f.o.b. mill, which brings the average cost delivered New York up to around 6.75 cents. Coated and enameled book is quoted at 8.50 cents at the mill, with some manufacturers asking more on better grades, while super book paper is quoted at 6.75 cents at the mill.

Wrapping papers are enjoying a brisk demand. The volume of business is below normal, but at the same time there is a snap to the demand that makes for a lively market condition, and in the aggregate consumers are absorbing large amounts of paper, especially kraft wrapping. Prices are firm with an upward tendency. No. 1 domestic kraft is freely bringing 6.25 cents a pound f.o.b. New York, and some mills are securing better than this price, particularly those situated a good way off from this consuming centre and who have to shoulder a heavier freight rate.

Fine papers are steadily picking up in demand. Jobbers are buying in a consistent manner, and the upward trend of mill quotations is attracting a good deal of speculative buying, speculative in the sense of consumers and jobbers anticipating forward needs and placing orders accordingly. Tissue papers are in good demand and firm in price, with No. 1 white tissue quoted by mills at an average of 90 cents per ream f.o.b. New York. Coarse tissues are in relatively larger demand than fine tissue, and mills making these grades of paper are busily engaged filling commitments.

The newsprint situation is firm but without fresh feature. Demand from publishers is consistent and is slowly but surely growing, and is likely to continue so until the end of the year, as between now and New Years is ordinarily the period of heaviest consumption of print paper. Spot newsprint in standard rolls is selling at 4.25 to 4.50 cents per pound at mills, with foreign paper offered at lower levels.

Box boards of all varieties are moving well and at firming prices. Plain chip is fetching between $37.50 and $40 per ton f.o.b. New York and filled new board between $40 and $42.50, with box manufacturers buying in a fairly regular way. Leading producers have announced an advance of 10 per cent in prices on clay coated folding box boards this week, and patent coated boards are up about $5 a ton from former prices levels.

GROUND WOOD.—There is a steady demand for ground wood and prices hold firm. Various consumers are in the market for supplies—newsprint manufacturers are absorbing comparatively large tonnages, tissue paper mills are buying in good volume, and wrapping and board producers also are taking their usual proportion of mechanical pulp. Considerable talk is heard in the trade anent the decreasing stocks at grinding mills, it being stated that the average grinder is shipping out more pulp today that he is making, and this has a strengthening influence on the market. However, the real sustaining factor is that consumers are buying, and indications are that should demand further broaden, pulp values would undergo additional enhancement.

Around $30 per ton at grinding plants is the price commonly named by domestic producers, with some reported asking higher figures. Now and then an offering of imported ground wood at $28 a ton or thereabouts ex the dock at American Atlantic ports is noted, but there does not appear to be very much foreign ground wood available. Moreover, it is stated that producers on the other side have marked up their quotations to a point where importers cannot afford to book orders at under $30 on the dock here.

CHEMICAL PULP.—The chemical wood pulp market has developed little or no new feature this week. There is a moderate amount of business current; paper manufacturers are generally reported as absorbing fair lots of different grades of pulp, but conservative members of the trade frankly say that the movement into consuming channels is still considerably below normal volume. Prices are holding steady, with an inclination toward higher levels, though, on the other hand, reports are received off and on of a lot of this or that grade of pulp being placed on the market at concessions in price. Kraft continues to be the firmest item, with sellers of both domestic and foreign kraft wanting at least 2.75 cents per pound for No. 1 quality kraft.

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SOLE AGENTS in the United States, Canada, Mexico and Cuba for

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INQUIRIES SOLICITED:

Bleached sulphite is quoted at around 4 cents a pound f.o.b. domestic pulp mills or ex dock, although one New York importing concern is said to be offering strictly No. 1 foreign bleached at 3.85 cents. Unbleached sulphite of foreign origin and No. 1 quality is quoted at 2.50 cents, domestic soda pulp at 4.25 cents and news grade sulphite at from 2.50 cents upwards, depending on the quality of the pulp involved.

RAGS.—Papermaking rags continue to advance in price. Signs are not wanting that the rise of prices is due in a large measure to trading among dealers, nearly everyone of whom is very bullishly inclined and who looks for higher market levels, yet it must be said that mills have increased their buying, particularly of certain grades. Roofing rags are moving freely toward mills at 1 to 1.10 cents per pound f.o.b. shipping points for No. 1 packing in the East and at as high as 1.35 cents at dealers' point in the Middle West. Old whites are stiffening in price, with repacked No. 1 whites held at around 5.50 cents at shipping points, and No. 2 repacked at 3.25 to 3.50 cents. New white shirt cuttings also are a strong item, and dealers in New York are reported demanding 11 cents a pound and higher for No. 1 packing. In fact, all grades, of new cuttings are firmly held at prices which paper mills in frequent cases decline to pay. The bulk of demand from mills is for bleachable rags, and it is understood that much difficulty is being experienced with some rags which are being shipped in by dealers containing German dyes which hold so fast that the rags do not bleach properly for consumers' purposes.

PAPER STOCK.—The mild boom in old paper continues and prices are still strongly on the uptrend. Dealers and packers are quoting all manner of prices to mills and in many cases seem to have forgotten all about the proportion of values, naming such figures that paper and board mills are declared to be turning to wood pulp. As an example, it is doubtful whether mills can buy a sizeable tonnage of No. 1 soft white shavings in New York at less than 3.75 cents a pound f.o.b. this city. Similarly, hard white shavings are held at a very high levels, most dealers asking 4.25 cents, or but a trifle less, for No. 1 packing in round lots. Old books and magazines are quoted at 1.60 cents, folded newspapers at 70 to 75 cents a hundred pounds, No. 1 mixed paper at 50 to 55 cents, white blank news cuttings at 2 cents, old No. 1 kraft paper at 2.25 cents, and dump mixed paper at 40 cents. Dealers contend that they are not beginning to get usual amounts of old paper from print shops and other sources of supply, and assert that the active demand from mills warrants their getting the high prices asked.

OLD ROPE AND BAGGING. The old rope market is firm and No. 1 manila rope is readily selling to paper mills at around 4.50 cents per pound at shipping points, with some dealers reporting receiving slightly higher prices. Old bagging is in somewhat better demand and No. 1 scrap bagging is generally held by sellers at around a cent per pound, with No. 1 scrap gunny quoted at 1.10 to 1.15 cents and roofing bagging at 60 to 65 cents a hundred.

PAPER AND PRINT AT LEIPZIG FAIR.

Business in the paper section of the Leipzig Fair is described as only moderate. The two principal buildings devoted to the paper industry were fully occupied. At numerous places worked-up paper of the most varied shapes could be seen. In the cardboard and packing material sections a large choice of cardboard articles, ranging from the plain hard paper roll to sweet boxes lined with velvet and silk, were exhibited. There is a general tendency to manufacture folding boxes for articles allowing of easy transport. Several types were displayed, among others the "Dowa Box" and the "Patent K Box."

In the letter paper cassettes a brisk business was done, preference being given to articles of first class quality paper. Among accountants' books, the so called American daybooks were in particular demand, but but lower priced books also met with a ready sale.

Among decorations for tables, walls, lamps, etc., there were lamp-shades of crepe-paper, flower pot covers of plaited crepe bands, sweet bags, travelling bags and all kinds of imitation stuffs, such as tablecovers, napkins, etc., in coloured crepe-paper; it is true that the large transactions expected were not effected, but the business done was satisfactory.

In block calendars business was good, and a particularly lively trade was done in artistic advertising calendars. Business in view-cards, writing materials, and school requisites was slow. For foreign countries stylish notepaper, blotting-pads, picture post-cards, and artistic prints met with a good sale.—World's Paper Trade Review.

Mr. John Matthews, prominently identified with the export gaper business for a number of years has associated himself with Parsons & Whittemore, Inc., commencing October 17th. Mr. Matthews' experience in the export paper trade is well known and his association with Parsons & Whittemore should further strengthen their world wide sales organization.

Scandinavian American Trading Co.

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Write us when you have any surplus of **Ground Wood** Bleached or Unbleached. We are always in the market.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

DRAWING BLOOD.

There is the old adage that one cannot get blood *from* a stone, but we know from experience that one can draw blood *with* a stone if the aim is good enough. These few lines are frankly intended to be a stone thrown with the deliberate intention of drawing blood. The blood we want in this case is life blood for the Technical Section and by this we mean interesting papers and lively discussion for the annual meeting that will take place in January.

There are a number of members who are known to have solved, or to be working on, problems that are of importance and interest to the whole industry and it would be comparatively easy for these gentlemen to put their results in the form of papers to be read at the meeting. The vigor and the success of the Canadian Technical Section are directly dependent upon the interest taken in the regular meetings and the work done between times by faithful committees. It might be said that the committee work is the bone and the papers and discussions the blood of the Section. Both are required. The success of our Canadian Technical Section is somewhat envied by our confreres in other countries and the fellowship and cordiality of our meetings are widely known. In spite of the high standard that is being maintained, it is possible to improve even upon the good record already set. To do so, in fact, even to maintain our place as a scientific organization, it is necessary to have the active co-operation of every member.

Those who have a subject which can be treated in a paper, whether brief or long, should communicate at once with the secretary so that a practically complete program can be prepared at the next meeting of the Council, which will take place in a few weeks. Let no one think that because his work resulted simply as a part of his regular duties, that the subject would not be an interesting one to discuss with the section. The gathering of a few extra ideas from the other members will well repay anyone for the trouble of preparing a paper and, more than that, it shows the author to be a man who appreciates his obligation to the other members and is willing to express it by contributing his part to the general fund of information on which he himself has the privilege of drawing.

If this stone of the editor's fails to hit its mark, it will simply mean that the secretary will have to go gunning with a weapon of higher power and greater accuracy; so come across.

This significant remark was recently over-heard on the train, "If at first you *do* succeed—look out!"

CALENDAR TIME.

Just as sure as the leaves fall in the Autumn, is the advent of a number of calendars. Most of them come along about the first week in January but there are two which appear in October, and which we always look for with great interest. They are the calendar of the Ontario Pulp and Paper Makers Safety Association and the calendar of the National Safety Council. The reason we look forward to the receipt of these calendars is because it gives us an opportunity of doing a little bit in the ever present campaign of Accident Prevention which is such an important factor in pulp and paper mill operation.

The receipt of these calendars and the request for the prompt placing of orders for them should awaken a new interest in the safety battle and suggest new ideas for the campaign. The election of a new Government is a matter of no greater public obligation than the preservation of a whole and healthy nation of individuals.

The two calendars, while on the same general subject, are so entirely different in their conception and execution that there is really no overlapping but it is rather like two sledges pounding one after the other on the same spike. Reports indicate that this continual hammering, occasioned by the daily consulted message of the calendar, brings results. Perhaps the most important feature of the calendar is that it carries the message of Safety First into the home which is really the birth place of worth while ideas and good habits. It teaches a lesson to the children and it arouses in them an interest in the dangers that surround the father or older brother at work and by so doing, increases the sense of obligation on the elders' part, through the comments and questions of the little ones, to be careful. It emphasizes too, dangers of the street and the home, which are beyond the reach of the Workmans' Compensation Act and which yet cause probably a far greater aggregate of suffering than do industrial accidents.

The very demonstration of the goodwill on the part of a company to its employees should be a weighty argument in favor of the distribution of calendars. It suggests personal thought on the part of the management and it could be made an opportunity for a personal message to each employee. Apart from this happy result, there is also the economic side and there is no doubt but that it pays the company in the saving of accident indemnities and decreased lost production, to place a calendar in the home of every employee.

Proofs recently sent out by the office of the Ontario Pulp and Paper Makers' Safety Association, Room 14, Manning Arcade, Toronto, show constant improvement in the quality of the calendar. The pictures are attractive, they are interesting, and they carry a message. The following is the schedule of prices F.O.B. Toronto: 1 to 10 copies, 25c each; 11 to 100 copies 22c each; 100 to 500, 20c each; over 500, 18c each. With orders for 300 or more, the name and address of the company will be printed on each calendar and, if desired, the text will be printed in both English and French. If this service is desired on orders of less than 300, a charge of $5.00 is necessary to cover the initial extra cost. It is particularly important that the secretary receive orders promptly.

Information regarding the N. S. C. calendar can be obtained from The National Safety Council, 168 No. Michigan Ave. Chicago.

CANADIANS ORGANIZED FOR TRADE.

In the British Trade News on another page of this magazine will be found a statement to the effect that a Canadian Chamber of Commerce has been organized in London. It is not so surprising that this Chamber has been organized as that it has not been organized sooner. Smaller countries than Canada and with a smaller export trade, have profited very considerably by establishing such bureaus which may serve as collectors of reliable information on trade prospects, reliability of prospective customers and as a rendez-vous for representatives of exporters when abroad. Such an organization is particularly needful where it is so necessary for countries to keep in close touch with one another as is the case with Canada and the Mother Country. Canadian firms are already doing a fair business with British concerns but there is no doubt but a far greater volume of trade would be accomplished if all of those interested in it would take a livelier interest and cooperate more vigorously in going after what business there is. The time has gone by when orders are handed out on a silver platter. Nowadays, they have to be dug up with a hoe and a good deal of hoeing is sometimes necessary before there is much to show for it, but the cultivation of the ground brings its own reward and the assiduous exporter is the one who will reap the benefits.

During the war the Government Trade Commissioner did excellent service and Canadian trade representatives are still doing good work. There appears to be, however, a particular field which neither the private individual or the Government Commissioner can effectively cover. It is here that an organization of manufacturers themselves can best serve their own interests by establishing such a cooperative bureau as a Chamber of Commerce. There are many proper functions for such an organization but one of the great benefits that should not be overlooked is the prominence and confidence that would thus be given to Canadian goods in one of our most important and most natural markets. It is to be hoped that the newly formed Chamber of Commerce in London will have the hearty support and enthusiastic cooperation of those who have a market in Great Britain or could supply such a market were they to assist in developing it.

COBWEBS.

We heard once of a penurious Yankee in Vermont who put off dying in order to save funeral expenses during the recent high cost period. The people of East Angus go him one better, in order to accommodate the editor of Brompton News. According to the last issue "Owing to the overcrowded condition of our columns, a number of births and deaths are unavoidably postponed this month."

GOOD WILL.

(From The Crest).

When you walk past the first newsboy in order to buy of another a block away—you give an example of the value of good will.

When your note is renewed without debate you are enjoying the credit advantage arising from your asset, good will.

When someone insists that a dealer supply your product as named, that is good will.

When reputation carries a man far in the front of the general line—good will has been one of the forces at work in his brain.

In all our human relationship there is in existence an invisible and intangible radiation, a heart wave or a brain thought or conviction which is called Good Will.

Endless it is in its ramifications and multiplications, the first few links, truly forged, are added to link by link in an endless chain. The growth goes on without end as long as hammer and anvil continue to ring with the sound of honest work, reputation and endeavour.

What is it worth?

It has been said that the Victor Talking Machine carry the good will item on their books at two dollars, but you couldn't buy it for two million. Others value it in various amounts, truly and otherwise.

Sometimes a competitor values good will at greater than one does one's self. He has to make progress against it and knows the hold it has upon the market.

Christmas day spread the idea of good will and Christmas is the most extensively advertised holiday throughout the world. It brings more money returns and more names to dotted lines than all the other holidays put together.

Advertising alone won't make "good will." No siree!! But no good product will ever reach its high point of good will value without continuous and far-reaching advertising of some kind.

From the Royal Bank magazine we read:

A judge of one of the United States courts, in a carefully-written opinion regarding a company which manufactured a popular and widely advertised product, declared that, on account of the good will of the public towards its trade-name, ". . . . if some mighty "catastrophe should destroy every vestige of the company's tangible property, it could go on again to-"morrow. And therein lies the great security of the "company's position. Good will is beyond the reach "of fire, or flood, or earthquake.

"Only the slow process of neglect can destroy it."

A Steel Company gives prominence to special features which are announced from month to month by tipping a slip on the covers of the house organs in which their announcement is made.

Jack Pine as a Pulpwood

Some time ago there was considerable comment on a newspaper article that was apparently inspired by the publication in the Pulp and Paper Magazine of a contribution by Mr. Frank Ritchie of the Wayagamack Co. Mr. Ritchie gave the results of an investigation into the use of Jack Pine for the manufacture of pulp; these indicated a possibility of wider use than is made of this wood at present.

The newspaper article is by "T.K.D." As some people interested in pulp and paper thought "T.K.D." a bit too optimistic regarding the actual qualities of Jack Pine as to length of fibre, etc., Mr. H. B. Stokes of the Forest Products Laboratories of Canada was asked for further information.

The effective utilization of this wood is an important matter and should be the subject of careful investigation and well worth the attention of such an organization as a National Research Institute.

"T.K.D." writes as follows:—

Who is Jack Pine? What is Jack Pine? Where is Jack Pine?

From the investors' standpoint, from the pulp and paper producers' standpoint and from the national standpoint, Jack Pine is quite a big fellow in his own particular way.

For generations of tree life, jack pine has been a sort of poor relation. It has been the weakling of the timber breed. But henceforth it will be quite an important member of the forestry family. Hitherto, jack pine has had a very indifferent place in the assets of the producing companies; it has had practically no place at all in the active operations. It has been used for the extraction of certain chemical properties, for railway ties, and for kraft wrapping paper—not a big market as timber markets go. And there are scores of millions of cords of jack pine. The woods are full of them, so to speak.

Jack pine, alias Banksian, alias Cypress, in the past has been a stubborn and reluctant servant of the pulp and paper mill; so much so that the expert woodsmen and mill operators deliberately ignored it as a means towards the end of pulp and paper making. Operators occasionally, inadvertently or with afore-thought, put jack pine into the stewing pot with the more respectable spruce and balsam, and always there was trouble —mostly pitch trouble. Jack pine, being a self-confessed culprit, was relegated again and again to the tall timbers.

Jack pine, it will be observed, has had a very bad name, and as a consequence was not invited to the daily dance of the wood-chips, or the jamboree in the mill digesters. Now we find that jack pine is not at all the sort of chap we thought he was. He has been exclusive, that is all. He can go into the digester, unaccompanied, and come forth a one-hundred per cent specimen of sulphite pulp, equal to the best composition requisite for the making of good and sturdy newsprint.

And this is the point: Most of the companies in which investors are interested have supplies of jack pine to the extent of 15 to 35 per cent of their standing timber areas. Most of these companies, in appraising the value of their physical assets, write the jack pine timber at, perhaps, less than one-half the value placed upon the timbers ordinarily used for the manufacture of pulp and paper.

My information is to the effect that in the Abitibi and the Mattagami companies' areas, for instance, jack pine represents over 15 per cent of the standing timber. Riordon, Price Bros., and North American Pulp run from 10 to 15 per cent. Brompton appears to have none. The St. Maurice River territory has 20 to 25 per cent of jack pine, while this timber on the Spanish River properties predominates all other classes of standing pulpwood. In the Upper Ottawa district, there are some 20 million cords of pulpwood, with jack pine giving an additional 3 to 4 million cords.

Thus, the available supplies of timber for newsprint production is some 15 to 25 per cent greater than has been estimated by the companies operating the areas. To put it another way, it has been estimated that the Province of Quebec has 155 million cords of papermaking timber. With the addition of jack pine the available resources will be increased to 185 million cords.

From experiments recently made, and successfully concluded by commercial as well as laboratory practice, the fibre from jack pine was found to be about 25 mm. longer than that of spruce fibre, which makes it particularly suitable for newsprint. The pulp made from jack pine proved to be as good as, if not better than, anything that can be purchased on the market.

It has long been an established fact that if jack pine is cooked in a mixture with other wood, trouble will result, owing to the fact that jack pine requires a stronger acid and a longer time for cooking than is required for other woods.

It is now an established fact that jack pine, cooked alone, will make a newsprint product equal to the best that has been coming from the Canadian mills.

Therefore, it is possible for those companies which in the past have been compelled to leave large areas of standing jack pine and cut further afield from their mills, to begin afresh near the source of manufacture, with several seasons' run of the near-by product, and thus reduce the average of the cost ratio by a very substantial and profitable margin. The clearing of those areas will also make available the shut-in balsam and spruce not economically workable in the past.

The additional advantage in respect to jack pine as a newsprint producer, is in the fact that the tree grows more rapidly than any other conifer. As a rule, it is peculiar to dry and sandy soil. Its powers of natural reforestation, after fire, are greater than any other conifer. On the average, jack pine attains twelve inches diameter, whilst a spruce grows six inches in the same period of growth. There are more cords per acre, on a given area of jack pine, than there would be even in black spruce, which probably has the speed record to date.

Incidentally, besides those companies already mentioned, Laurentide is high in jack pine holdings. The Provincial Mills and the Belgo Canadian have a high percentage of jack pine.

The causes which have kept this valuable timber from practical consideration are: a remarkable degree of ignorance; much prejudice; a modicum of laziness, and no doubt the fact that only too often is invention still-born when necessity has no need to function.

Clearly, the scientific and chemical resource which has brought jack pine within the scope of the papermaker, has given to Canada's forests a renewed lease of life; while to investors has accrued an unexpected increment in the shape of increased physical assets, where a decrease might reasonably be expected through seasonable depletion of the reserves of what to date have been considered the only timbers suitable for paper production.

I am indebted to an article which appeared in a technical journal, from the pen of Mr. Frank Ritchie of the Wayagamack Pulp & Paper Co., which article prompted my investigation of the subject.

Mr. W. B. Stokes says;

During the past few months an article on the subject of Jack pine as a pulp-wood has appeared in a number of daily and weekly newspapers and technical journals published in all parts of the Dominion. I refer to the article entitled "The House Jack-Pine Built" written by T.K.D. which made its most recent appearance in the May issue of the Illustrated Canadian Forestry Magazine. Of course all Canadian subscribers to the Pulp and Paper Magazine are also members of the Canadian Forestry Association and can refer to the article referred to. There is no doubt that in spite of the light facetious manner in which the article is written it contains a great truth. Undoubtedly Jack pine is a pulpwood of considerable importance in Canada and can be used to great advantage in the manufacture of sulphite as well as sulphate pulp. A visit to some of the largest newsprint mills of Canada will reveal the fact that they are using very high percentages of jack pine in the manufacture of sulphite pulp.

In all the editions of the article by T.K.D. a curious slip is repeated. It is stated that "the fibre from jack pine was found to be 25 mm. longer than that of spruce." This is probably an uncorrected printer's error and intended for 25 per cent. The determination of fire-length is a very long and rather complex operation and much work has yet to be done before such such a definite statement should be made. Something has been done, however, and reference to the files of the Pulp and Paper Magazine and elsewhere give some idea of the true state of affairs.

In the issue of this magazine for May 16, 1918 Lee and Hovey stated that the fibre-lengths of jack pine and white spruce were as follows:

Jack pine	4.00 mm.
White spruce	3.10 " .

I do not know their authority for the fibre-length of jack pine but the fibre-length of the white spruce was determined at the Forest Products Laboratories under the direction of H. N. Lee. In view of subsequent work the value given above for jack pine should be ignored.

In the Pulp and Paper Magazine for October 2, 1919, Kress, Wells and Vance give the following values:

Jack pine	2.5 mm.
White spruce	2.8 "

In the Pulp and Paper Magazine for October 28, 1920 Ritchie quotes values obtained by A. D. Little, Inc. as follows:

Jack pine	2.26 mm.
White spruce	1.92 "

About 25,000 measurements of fibres of various Canadian trees have been under supervision of H. N. Lee at the Forest Products Laboratories of Canada but have not yet been published. A reference to the results reveals the following average fibre-lengths:

Jack pine	2.37 mm.
White spruce	2.87 "

The value given for white spruce is an average for three trees and includes the tree from which the value 3.10 mm. was obtained in 1918 as already mentioned.

It would appear from these more extensive determinations, therefore, that the fibre-length of jack pine is somewhat less than that of white spruce. The difference is not sufficient however to justify any remark to the effect that jack pine is on that account unsuitable for sulphite pulp. The practice of some of the largest Canadian mills demonstrates that jack pine is most valuable for the purpose.

While still on the subject of jack pine I would like to add something to T.K.D.'s eulogy of this peculiarly Canadian timber. Jack pine is of very great importance for railway ties. The proper methods of creosoting ties of this wood have been determined at the Forest Products Laboratories of Canada. The use of this tree for mine timbers has made it important to test its strength in that form and its use as lumber, which is increasing, makes the results of tests on small clear specimens of considerable value. Such tests on mine timbers and on small specimens have been made by the Division of Timber Tests at the Forest Products Laboratories of Canada and the results show that the strength of jack pine has been generaly underestimated. Jack pine was, of course, shown at the Empire Timber Exhibition held in London last July and the writer found that, although some Canadians affect to despise it, yet it had already made many friends in Great Britain.

In addition to the contributions to the subject, the folowing is an account of jack pine as given in a work issued from the Forest Products Laboratory of Madison, Wis., in regard to the suitability of various species of American woods for pulp and paper production:—

JACK PINE—Pinus divaricata. Wt. 24 lbs. Fibre 2.5 mm. **Range**—New Brunswick to New Hampshire and west through Great Lake and Hudson Bay (Southern shores) region to Great Bear Lake, Mackenzie river, and Rocky Mountains; Indiana and Illinois, and central Minnesota.

Common Names—Scrub Pine (Me. Vt., N.Y., Wis., Mich., Minn., Ont.); Gray Pine (Vt. Minn., Ont.); Jack Pine (Mich., Minn., Canada); Princess Pine (Ont.); Black Jack Pine (Wis.); Black Pine (Minn.); Cypress (Quebec to Hudson Bay); Canada Horn-Cone Pine (Cal. Lit.); Chek Pine; Sir Joseph Bank's Pine (Eng.): "Juniper" (Canada); Banksian Pine (lit.).

Sulphite Pulp—
Yield 1,080 lbs. Very difficult to bleach.
Not easily pulped—fair strength—poor color.
Pulp shivey and full of pitch.
Possible uses—Mechanical difficulties when running this pulp over the paper machine prevent its use.

Sulphate Pulp—
Yield 1,150 lbs.
Character—very strong tough fibre.
Possible Uses—Similar to white spruce.

Mechanical Pulp—
Yield 2,130 lbs.
Character—Gray, somewhat soft, good strength, pitchy, poor finish.
Possible uses—Medium grades of groundwood.

The Cornish China Clay Industry

By W. TRETHEWEY.

The revival of business on this side of the Atlantic and particularly the China Clay industry of Devon and Cornwall should be of profound interest to all who are eagerly contemplating the return to former commercial activity. For months past the great world-wide slump and complicated, industrial unrest, had about devoured the great energising acumen of the British business race that trade became dull and motionless generally. Instead of subordinating their demands with the exigency that had arisen in most of the trades if not in all, and particularly the coal-fields, the workers were simply out to intensify the blow which our country had sustained by a great re-action of trade. Fortunately better counsel prevailed in our China Clay industry and the workers have accepted the inevitable change of lower wages with a sang-froid that is both commendable and characteristic and worthy of emulation.

At the last meeting of the Associated China Clay Ltd. there was a most significant gathering of all those engaged in the production of China Clay, which naturally gives the town of St. Austell the prestige of being the clay-opolis of the world. A similar spirit of optimism appeared to have to have been prevailing among those magnates whom I met, at the improved prospects. Mr. McDonald, the manager of the Continental Branch of the West Carclaze China Clay Co. at St. Austell was the first to accost me on the subject. He said "Well, trade is looking better," and informed me that the reduction just made by the producers would have a big effect upon the continental markets and orders as well as enquiries were already flowing in quite satisfactorily with a reduction in the price of bags, casks and freightage there was every inducement for the consumers in all countries to turn to Cornwall for requirements.

I was also fortunate in having a few moments chat with Mr. Walter Sessions, one of the great magnates of the industry and one of the three managing Directors of the English China Clay's Ltd., a firm with an enormous capacity of 500,000 tons per annum, who also endorsed the prevailing opinion that trade, though for the present somewhat dull, showed signs of keener activity. The coal strike had been a great obstacle in the resucitation of the clay trade, but now that was removed there was no reason why there should not be a gradual return to normal conditions. The prices had gone, but in common with other industries that did a large export trade they were feeling the effects of the abnormal rates of exchange which operated against them and was such a factor in the curtailment of trade. Manufacturers in all countries had, or as least the majority of them, large stocks which were made to eke out until the cost of clay became more stabilised. Throughout the United States of America and Canada the Paper-makers and the Potters had experienced great labour difficulties which prolonged the situation but he considered the markets were now recovering and the prospects of a restoration of trade in Canada was very encouraging. The English China Clays Ltd. were quite prepared for the accession of trade to any extent and several kilns which were closed down during the Coal Strike have been re-started. Mr. Sessions expressed the opinion that there would be a corresponding decline of unemployment as the prospects of trade materialised which would be a good thing for all concerned in the welfare of their country.

It was my very great pleasure to meet Mr. C. H. Knight, President of the Paper Makers Importing Co. of Easton, Pa., who had been on a rather extended visit to the Cornish Clay fields in company with Mr. George Bryan, of the Sales Department of that firm. Mr. C. H. Knight succeeded to the head of this firm on the death of his father whom it was my privilege to know and with whom I have the happiest recollection of a visit we made to the North Cornwall China Clay Works a few years ago. The interesting narratives he gave me of his early pioneer days with the Cornish China Clay industry and the United States as well as Canada, will remain fragrant for many years to come. Mr. C. H. Knight, the present administrator of the firm, is a native of Lancashire, England, and me informed me that he was born at Newton-le-Willows, but his connections with America have almost eliminated his English accent and to the uninitiated he is a characteristic American.

Discussing the prospects of an early revival of trade with America and Canada Mr. Knight informed me that there had been such a large number of strikes among the employers of all classes of manufacture that it was well nigh impossible to do business to any great extent for the present. Fortunately the resolute attitude of the employers, had in every instance, opposed the pernicious policy of the labor unions. About the middle of last May some firms resolved to pay certain reduced wages which the men were told they could either accept or reject. The men rejected the terms and plunged into a strike but eventually discerning the resolution of their employers the men accepted the proffered terms with a result that the settlement came too late to help trade this year as the foundations of their business were laid in the Spring of the year. In the paper mills there had been a great slump since October last, attributable to the large increase of new mills erected during the war and also the considerable expansion of the capacity of old mills resulting in the creation of large stocks for depletion. The reduction of the tariff that came into force during the democratic regime of President Wilson, opened valves for a large importation of foreign paper which, instead of restoring trade, precipitated a general depression that followed, as a result of such an innovation. Only those new mills which were erected upon stringent economical lines and modern principles, and those mills that had undergone a thorough modern reconstruction were enabled to survive the great commercial crisis that had overtaken them. The International Paper Company of America, one of the very largest manufacturing firms of newsprint, were forced to close down through a strike but after a lockout many protagonists accepted a reduction of wages.

In the Potteries, notices had been served for a genaral reduction of 20 per cent. on Oct 1st, because the men had not hitherto realised that wages had to go down and it was felt better for all firms to get the wages question settled before they get into their autumn stride. This ultimatum the men rejected and a general strike was proclaimed. The employers had won all along the line in their various disputes with the employees and it was quite apparent that this dispute would end in a similar way. Whilst we were thus discussing, Mr. Knight received intelligence that such a result had been achieved and in his opinion there would be a gradual increase from now onwards. The whole country was so short of buildings that there was certain to be a boom in the building trade which would be but a reflex of other industries.

Regarding the future of the China Clay trade of America and Canada and our English producers, Mr. Knight was very optimistic and he was very hopeful that we were on the eve of a 20 year period of downright good business. The Senate had introduced a new measure called the Fordney Bill which proposes the raising of the duty on China Clay from 1½ dollars enacted by the Democratic regime to 2½ dollars per ton and 1 dollar on Ball Clay, instead of 50 cents.

Among the very first to feel the effect of the strike disease, were the silk manufacturers, but now with peace restored to the mills they are doing quite a normal trade. Other trades are rapidly recovering from their labor troubles and the indications are that they will soon be entering upon quite a new and interesting era of activity.

Mr. Knight informed me that the firm he represented had made great extensions recently and one of the new avenues of business was the manufacture of their own rosin. They were extracting this product from their own plantations in its crude liquid form and by their own plant, were manufacturing it into paper size which not only eliminated the necessity of cumbrous barrels but enabled them to transport the refined article to any part of the world at a considerable saving to the consumer.

On the same day I met Mr. D. T. Taylor, the energetic business manager of Messrs. H. D. Pochin & Co., of Manchester and St. Anstell, a firm that has several famous mines in the county with capacity of over 200,000 tons annually. Between his mutifarious calls from the telephone and other pressing official enquiries previous to his leaving for Manchester, Mr. Taylor was kind enough to remind me of the opinion he expressed a month ago "that as soon as the strike was over there would be a great change from the depression which had overshadowed them for several months. Whilst waiting at the firm's commodious official quarters at St. Anstell, the telephone operator was quite busy receiving enquiries and fixing up the arrangements for the despatch of orders. The firm had restarted the three large chemical manufactories, remarked Mr. Taylor, which was taken to imply that business was once more getting brisk and the same thing applied to the China Clay trade. The markets of Canada and America had been very good to them and there was an exceptionally good demand for their clay in India.

SHAKESPEARIANA.

Lew gave her classes a test in which she asked them to name five of Shakespeare's plays. Among the titles received were these:

King Liar.
A Merchant of Venus.
Old Fellow.
McBath.
Omelet.

Which reminds one of the high-school pupil who said that Shakespeare's most famous poem was "Venice and Adenoids."

THE MONTREAL PAPER CLUB.

An interesting recent development in organizations interested in pulp and paper, is the formation of the Paper Club at Montreal. This was organized yast year with a purpose of bringing together the salesmen of the city who are connected with this business. The purpose of the club is as outlined in the by-laws (a) to bring about wider acquaintance amongst those engaged in selling of paper and paper products.

(b) To assist in raising the efficiency of selling methods.

(c) To promote development of the highest sales ethics among its members.

(d) To increase the use and sales of paper and paper products.

The club got a good start last spring before the Summer holidays and has just now resumed activities. The lively interest that is shown at the meetings, the spirit of good fellowship which prevails and the opportunities afforded for learning about the manufacture and use of paper not only make for greater interest and efficiency on the part of the membership, but promise to make the club an important factor in the appreciation and the more general use of paper by the community which is served by its members. There is room for a similar club in every city in Canada.

At the meeting of the club which was held on Friday last, more than forty members met for luncheon at the Queen's Hotel and listened to a very interesting address by Mr. E. D. Ring, an advertising expert who appreciates the intimate connection between advertising and paper making. The subject of his talk was "How Direct Advertising helps the Paper Salesman" Mr. Ring is well qualified to talk on direct advertising, having had a long and extensive experience. Mr. Ring also thoroughly understands printing and engraving, and very ably told the paper salesmen how they could increase their own interests by understanding Direct Advertising. Being in a position to suggest the proper stocks to be used on the different campaigns, this knowledge, Mr. Ring pointed out, would gain the customer's goodwill for the salesmen ,and further Direct Advertising, which boiled down means the more Direct Advertising used, the more paper used. Mr. Ring also touched on magazine and newspaper advertising, and did not wish his talk to discount these mediums; they had a place of their own which he clearly defined and supported. To the interest of the coarse paper salesmen present, Mr. Ring said that Direct Advertising also meant more business for them in as much as Direct Advertising was planned and launched to sell more goods, and the more goods sold the more had to be wrapped up.

Mr. Reynolds, the president presided, and called the next meeting for Tuesday, November 15th, when he expected to see many more new members, a great many can yet be recruited from the coarse paper section said Mr. Reynolds. The club membership is now 54, watch it grow!

The following firms were represented:—

Victoria Paper & Twine Co.; National Paper Goods Co.; Federal Paper Company, Ltd.; E. B. Eddy Company; W. V. Dawson, Ltd.; Dominion Paper Company; Beveridge Paper Co.; Rolland Paper Company; McFarlane Son & Hodgson; Havill Paper Company; Howard Smith Paper Mills; Harrisson & Crosfield, Ltd.

Every man's destiny is largely of his own making.

Determination of Available Chlorine in Bleach Liquor

By MORRIS SCHRERO.
Research Laboratory, American Writing Paper Co., Holyoke, Mass.

In a contribution to the *Journal of Industrial and Engineering Chemistry* for July, 1921, Morris Schrero recommends a different method of determining the available chlorine in bleach liquor from that usually followed in paper mill laboratories.

The usual paper mill practice is described by Ross Campbell in *Paper,* xx, 14. A serious objection to this, which provides for the use of a hydrometer, is that there is no definite relation between the specific gravity of the solution and the available chlorine.

The new method proposed by Schrero was suggested by an article by W. H. Chapin in the *Journal of Industrial and Engineering Chemistry,* x (1915), 527, describing a rapid pressure method for the determination of carbon dioxide in carbonates, and depends upon the measurement of the pressure exerted by the oxygen generated when hydrogen peroxide reacts with hypochlorites in alkaline solution according to the following equation:

$$CaOCl_2+H_2O_2=CaCl_2+H_2O+O_2$$

The method has been used in the American Writing Paper Company's mill at Holyoke for nearly a year with satisfactory results; while the method cannot be regarded as equal in accuracy to the customary laboratory methods of titrating bleach liquor, the results are said by the author not to vary more than 0.02 lb. of 35 per cent bleach per gallon from those obtained with sodium thiosulphate.

The apparatus consists of two bulbs connected by means of a stopcock and a by-pass. The upper bulb has a neck which allows the apparatus to be clamped, and the lower bulb has an opening attached to it at an angle of 5°. A manometer tube is fitted into a rubber stopper, and to this tube is attached a sliding scale, graduated to read in lbs. of 35 per cent bleach per gallon of liquor. Readings can be made to hundredths of a pound. It is obvious that the dimensions need not necessarily be those given in the sketch, but they have been found to be the most convenient for a bleach liquor containing about 0.5 lb. of 35 per cent bleach per gallon of liquor.

The calculations and the calibrations of the apparatus are carried out as follows: The volume of the apparatus is determined by filling with water and weighing. The difference between this weight and the weight of the apparatus empty gives, for all practical purposes, its capacity: To determine the volume the evolved gas occupies, the volume of the liquid put into the apparatus must be subtracted from the capacity named above. From the equation given above, it can be seen that the amount of oxygen evolved is equivalent to the available chlorine of the bleach liquor. Designating the volume as V, the pressure of the oxygen as read on the manometer as P, and the temperature as T, the following equation corrects the volume V for temperature and pressure, and gives:

$$\text{Lbs. of 35 percent bleach per gal}=\frac{V\times 273\times P\times 0.00317\times 8.33}{(273+t)\times 760\times 0.35\times \text{cc. sample}}$$

where 0.00317=g. of chlorine gas per cc. (standard)
8.33=factor to convert g. per cc. to lbs. per gal.
0.35=wt. of chlorine in one unit of 35 per cent bleach.

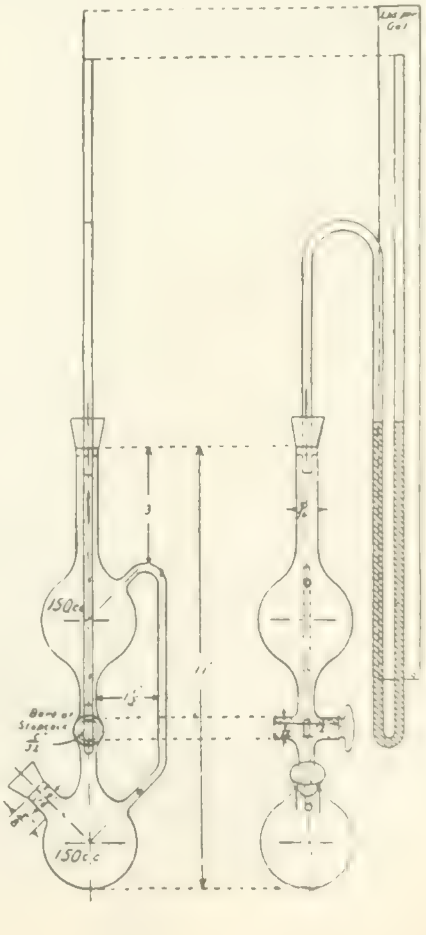
In plant control work the size of the sample and the volume V are constant, the temperature t is assumed constant, and hence the bleach strength is directly proportional to P. Therefore the equation becomes
Lbs. of 35 per ct. bleach per gal=KP.

The number of mm. of mercury P that would correspond to 0.1 lb. of 35 per cent bleach would then be P=0.1/K.

Having determined the number of mm. that correspond to 0.1 lb. of 35 per cent bleach per gal. of liquor, the scale can be constructed by marking off on any convenient material multiples and submultiples of the number obtained.

Procedure

In actually using the apparatus, it is first clamped with the stopcock closed, in a rubber covered buret clamp. Ten cc. of the bleach liquor are pipetted into the lower bulb, while with another pipet 10 cc. of hydrogen peroxide are measured out and put into the upper bulb. The opening in the lower bulb is then tightly stoppered, and the manometer with its attached scale is put into the neck of the upper bulb. The manometer should be tapped gently so that no small particles of mercury adhere to the glass. When the manometer is inserted, there is usually a slight pressure developed, but, for the purposes for which this apparatus is intended, this can be disregarded. The stopcock is then opened, allowing the two liquids to come together. In order to make sure of complete reaction, it is usually necessary to shake the apparatus. This is done by placing a finger on the rubber stopper containing the manometer, and



the thumb and a finger on the neck of the apparatus, and shaking until the bubbles of gas are set free. The reaction is usually complete in 40 to 50 sec. The scale is then adjusted so that the zero point coincides with the top of the lower arm of mercury and the number of lbs. of 35 per cent bleach per gal. of liquor is read at the mark that coincides with the top of the uper arm of mercury. The whole operation does not take more than 90 to 100 sec.

It is not necessary that the temperature of the apparatus and its contents be at exactly the temperature for which the scale is graduated. It has been calculated that if the temperature of a bleach liquor that would give a reading of 0.5 lb. of 35 per cent bleach per gal. at 22° C. be 8 degrees higher or lower than the assumed temperature, the reading would be less than 0.015 lb. higher or lower than it should be. In view of the fact that the error in measuring out the liquor in the mills is much greater than this error or those that are introduced by the liquid, the slight pressure developed on inserting the manometer, etc., corrections need not be made for any of these.—Paper.

USING PRINTING EFFECTIVELY.

One manufacturer of biscuits encloses in every package of its biscuits a sample of another kind of biscuit. The sample is enclosed in a wax container on which suitable explanatory printed matter appears.

* * *

"My own experience has been that a booklet should always be accompanied by a letter."

* * *

When the reader of your advertisements takes the time to sit down and ask further particulars about your goods, he shows considerable interest in your product, and you should have a reply ready to send him that will explain his questions and increase his interest and arouse his desire to purchase. "This can be accomplished best by a good booklet and a brief accompanying letter."

"This booklet method of answering inquiries is often the cheapest from the standpoint of results."

* * *

A Boston Shoe Manufacturer uses blotters to announce the mailing of his catalogue and the visits of his salesmen.

SAN DOMINGO A NEGLECTED MARKET.

San Domingo, which has been described as the West Indian Island "of the greatest possibilities and the least achievement," seems to be neglected and almost ignored by British manufacturers and traders, says the "Manchester Guardian Commercial." Yet in the fertility of its soil, its mineral wealth, and its healthy climate it is reckoned not even second to Cuba. Since the advent of the United States Military Mission in Control of Customs and Finance, its government has been stable and political disturbances unknown, with the natural result of increased commercial activity. Between 1909 and 1919 the total volume of trade more than quadrupled. In 1919 the volume of trade totalled £15,00,000, of which the United States secured 84 per cent of the entire value.

If a man has reported to you that a certain person speaks ill of you, do not make any answer to what has been told you, but reply

"The man did not know the rest of my faults, or he would not have mentioned these only." — Exchange.

INDUSTRIAL AND TECHNICAL PHOTOGRAPHY.

By JOH. H. GRAFF.

Industrial Photographer and Photomicroscopist,
Brown Company, Berlin, N.H.

During the last few years photography has more and more developed to be an important factor in industry, commerce and science, and a number of large concerns have established permanent photographic departments of their own as an aid to better efficiency in administration, engineering, research, buying, selling, advertising, education, cooperation, and for many special purposes peculiar to the individual needs of the concerns.

All have been striving for the same result—to make photography a help and not merely an added overhead expense. As industrial and technical photography not only have come to stay, but will get a much larger application in the future than heretofore, it would seem wise if all organizations which use photography in one form or another, could put their experiences together for the mutual benefit of all.

It is therefore, the purpose of this article to ask every one using photography in their plants or organizations, to assist the writer in making a survey of industrial and technical photography by sending him samples of different types of photographs used; a short statement of how and why photography is being used, as in field, office, plant or research; information as to how far an outside photographer is employed; or if the users have photographic departments of their own, together with a history of the development of the same. Methods of mounting, filling and reference are important; also statements of the costs and upkeep of the departments and the value and importance of them.

In case one has a photographic department of his own, would it be advisable to recruit his help from the photographic profession, or develop some of his men for this work? Should our technical schools develop men as photographical engineers to meet the growing demand for practical industrial photographers?

The writer will compile all this data and information, and together with his experience of eight years in the development of industrial photography, make a complete history of the development and uses of the same, to be published in one of our leading technical magazines. The more each one contributes to an article of this kind, the more valuable it becomes.

Would a convention of the users of industrial and technical photography be of any value? If so, would you pledge your presence and support to a convention of this kind, and where would you suggest this to be held?

If enough interest and a large enough attendance for a conference of this kind could be secured, the plan would be to arrange a conference with an exhibition of all forms of technical and industrial photographs, and lectures on different photographic subjects in relation to industry, science, research and commerce.

PRECISELY.

William Jennings Bryan would never tell this story. It's on a "Pussyfoot" lecturer who was talking in a certain hall one evening on the drink question. "Now, supposing I had a pail of water and a pail of beer on this platform, and then brought on a donkey; which of the two would he take?" "He'd take the water," came a voice from the gallery. "And why would he take the water?" asked the lecturer. "Because he's an ass," came the reply.

Production Chart for Newsprint

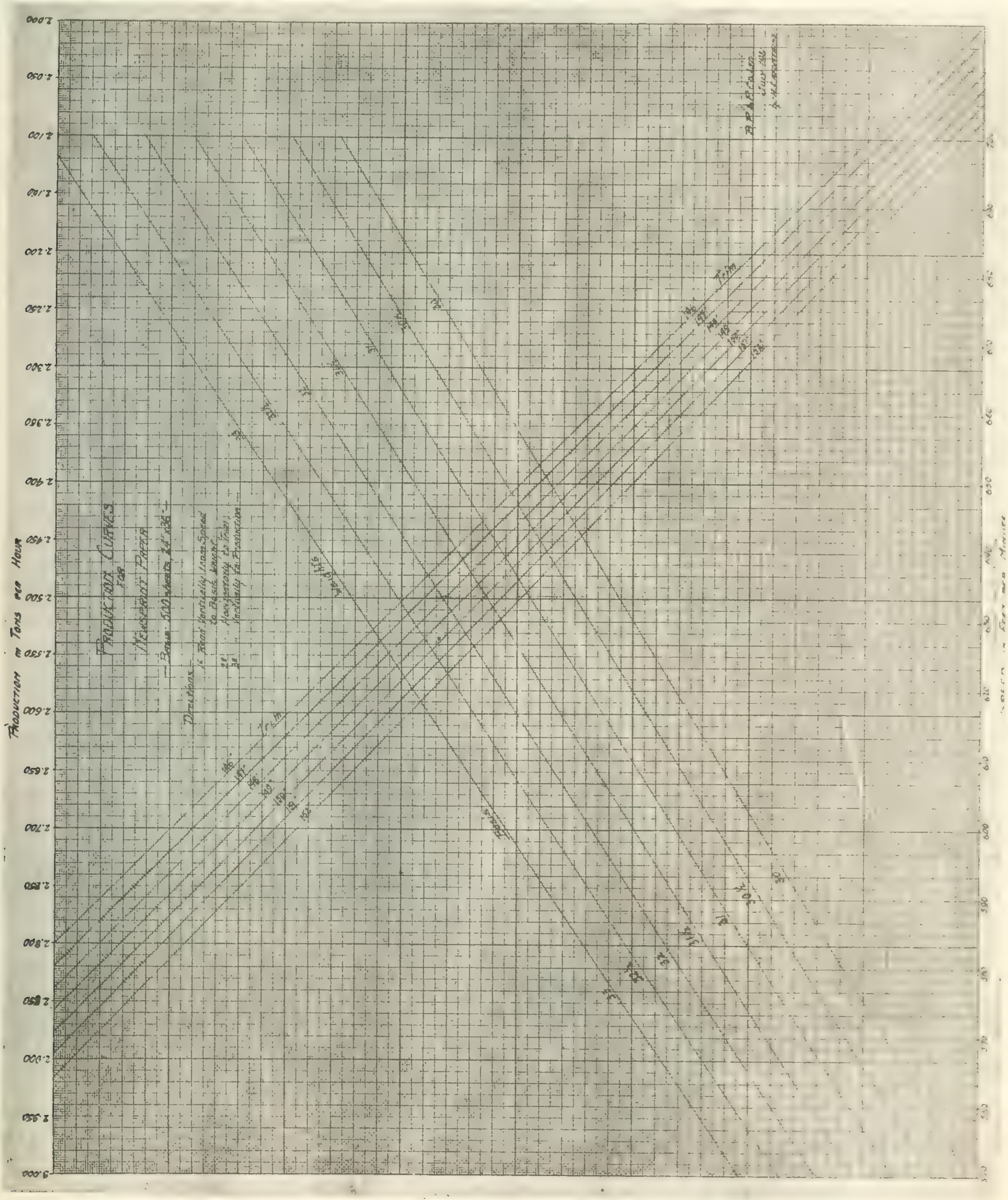
By Gerard H. Lafontaine, Brompton Pulp & Paper Co., Ltd.

This chart was made out at the request of the Cost Department as a time-saving device. It proved afterwards to be also very useful to the superintendent and machine-tenders who can by its use ascertain at a glance the ideal production of the machines.

Similar charts can be made out for other kinds of papers, cardboards, etc., from the well-known equation:

$$P = K \times S \times B \times T$$

where P = production in tons per hour
K = a constant which varied with the standard size of the sheet and the number of sheets to the ream.
S = speed in feet per hour
B = basis weight in lbs.
T = Trim in feet.



British Trade News

(From Our London Correspondent.)

The importance of establishing a fire-fighting squad in a paper mill has been amply demonstrated during the past week at the Croxley Paper Mill, in Herts, which is owned by John Dickinson & Co., Ltd. A fire broke out in a building filled with esparto grass and wood pulp, and in a twinkling the mill fire-fighters were at it. They tackled the outbreak with great ingenuity and with a plentiful supply of water it was not considered necessary to call the assistance of fire brigades in the district, which proved a financial saving to the firm. It is estimated that 550 to 600 tons of esparto and pulp were in the building and the mill fire-fighters confined the flames to one buiding, thus preventing the work of the mill being stopped and business being interrupted. It is considered a smart piece of work and goes to prove that in the end there is nothing like a quick fire-fighting squad and a proper supply of water to fill the hose when flames break out in any part of a mill.

New Offices.

The Anglo-Canadian Wax Paper Co., Ltd., whose offices were at the Watford mills, announce that they have installed themselves in new offices in London at 5, Tudor St., E.C. 4. This means more consolidation of business as people visiting London will now be in a position to call at the offices whereas in the past it meant a run on the electric trams out to Watford.

Lord Beaverbrook Grieves.

Lord Beaverbrook, who sometime ago was enjoying some cool bathing at Deauville, in France, has again had criticism hurled at sellers of newsprint. He is interested in the London "Daily Express," but he selected the "Sunday Express" for his reference to events in the newsprint industry since 1919. "In that year," he states, "there was a regular panic about the supply of newsprint. Not only was there an actual scarcity, but this scarcity was greatly exaggerated in the minds of the buyers concerned. Publicists conjured up in their minds the bleak picture of a day when they would be no longer able to feed the roaring, hungry, presses with the daily meal of newsprint, and when the subscribers in the morning would ask for their favorite journal in vain. So much is the reading of the public a matter of acquired habit that a newspaper which suspends publication signs its own death warrant. Its Kingdom is taken from it for ever and given to some Mede or Persian over the way. The newsprint buyers, therefore, tumbled over one another into the market to secure their future. Princes went soaring up sky-high. It was a great era for the newsprint manufacturing trade. In 1914 newsprint cost £10. In 1919 the ton was sold for £60. Such an inflated price could not, of course, last but the trouble did not end with an increase in the newsprint supply. In their nervousness of the future the buyers allowed themselves to agree to long contracts, lasting in many cases right into 1927. In other words, though newsprint can now be bought freely in the open market at £20 a ton, the newspapers with contracts are still paying £35 to £40 a ton. Such conditions are a tremendous handicap to any venture."

Another Statement.

Some of the papermakers would like to know where the mills are that are benefitting by these 1926-7 contracts. But in April 1921 Lord Beaverbrook put his signature with that of Sir Edward Hulton, of the "Daily Sketch" to a statement in the "Manchester Guardian" to the effect that "The statement that the manufacturing industry is selling here below cost price is perfectly true." The further suggestion that this state of affairs is due entirely to competition from European debtor countries needs qualification. It is also due to the fact that manufacturers are working off raw materials (ground wood and chemical pulp) bought in foreign countries under contract at the very high prices of last year. At the best these contracts will not run out till June 1922, but the materials have to be used at some time or another and the consequent losses faced." It is quite true that English paper mills have purchased raw materials for forward delivery in accordance with their usual practice, just in the same way as big newspapers enter into forward contracts for newsprint. But Lord Beaverbrook has already been told that British mills were prepared to stand the loss involved by liquidating their raw materials purchased at high prices if they could run their mills at full time, and he was further informed that many British and Irish publishers had brought their foreign newsprint for forward delivery over 1921 at prices nearly double that at which British mills were selling. The contracts were made in 1920 with mills in Sweden, Norway, and Finland. Consequently publishers are no more subject to criticism than the British paper mills are for purchasing raw materials ahead. It would be a grand move for Lord Beaverbrook if we could do what the Germans have done, viz., the Government cut and supply pulpwood to the mills for two years at prices which are half the lowest figures for similar pulpwood in Canada, Newfoundland, Sweden and Norway. When the paper was produced publishers and consumers got it at a price below the cost of the raw material and the balance exported, the additional price obtained for the exported quality being divided between the German Government and the German mills. This is what Lord Beaverbrook would like; it is not trading—it is politics and ruin for the workpeople.

The Safeguarding Act.

If any British manufacturer wants to get any imported article brought under this Act the following preliminary information must be first submitted to the Board of Trade: (1) name of article and full particulars of sale; (2) country or countries of origin; (3) particulars and evidence as to price sold, or offered, in the United Kingdom; (4) evidences as to price at which similar goods can be profitably manufactured in the United Kingdom; (5) evidence to show that the depreciation in relation to sterling of the currency of the country of manufacture is responsible for the fact that the prices at which goods are sold or offered for sale in the United Kingdom are below the prices at which similar goods can be profitably manufactured in the United Kingdom; (6) evidence as to the extent to which by reason of the sale, or offer for sale, employment in any industry in the United Kingdom is being or is likely to be seriously affected. When this information is furnished and a prima facie case made out, the Board of Trade will appoint a committee to go into the complaint, report, and the Board will do the rest.

The Canadian Chamber of Commerce.

Some time ago I made a brief reference to the Canadian Chamber of Commerce in London. The object of this Chamber are briefly the encouragement and promotion of Anglo-Canadian trade and Commerce, the development of Canadian industries by British capital, and generally the furtherance of Canada's interests in the United Kingdom. Canadians in England are asked to get in touch with the Chamber or the Secretary Mr. R. B. Stewart, Canadian Chamber of Commerce in London, 55 Holborn Viaduct, E.C. I am very pleased to see this new body established and I would advise all pulp and paper men to make use of it. The Swedes and Norwegians have very successful chambers here—they miss nothing, either in publicity or otherwise—and are very keen in studying the interests of their own countries. It is to be hoped the Canadian Chamber will be as useful, but to make it so those in the Dominion must utilize it.

News From Europe

(Compiled in London by Dr. Paul Bartholow especially for the Pulp and Paper Magazine.)

Proposed Color Scale For Printers' Inks.

It is now realized that inks used in printing and the graphic arts should be classified, i.e., the colors used should be reduced to a scale or orderly system of tones, the various shades of which, being almost innumerable and incapable of definition, must therefore be designated by numbers and indexed for purposes of matching. The study of color in its relation to inks is regarded as "imperatively needful" by the Dye Commission now sitting at Leipzig, who, with Professor Oswald's help have been engaged in the determination of eminently practical questions, the fastness of these inks to light, water, oil and air, resistance to heat and other fixed qualities. The meeting voted to adopt Oswald's scheme of color orders. Apart from scientific interest the proposed scale has great practical importance.—Papier Zeitung, September 1, 1921.

24 Hours A Day Mills.

The Frankfort Messe or Fair has proved a brilliant commercial success and the newspapers gleefully describe the rooms in which the show is made to crowds of buyers from Italy, Holland, Switzerland, England, and the United States. Besides these indications correspondents hear many evidences of German industrial prosperity. For instance a Kulenbach spinning mill is working 24 hours a day in 8 hour shifts. Such a case may not be common, but it is incontestable that workmen are busy 12 hours a day in the paper and textile mills, working under the stimulus of fictitiously high wages. The manufacturers, on their side, are profiting, since wages on the whole have not kept pace with the increase of prices, and paper makers therefore in value are actually paying less for labor than in 1914. Moreover by an odd coincidence trade improves with the fall of the mark, and the incredibly cheap prices of paper and other products at the Fair have attracted a flock of foreign buyers who are pulling out enormous orders. In short the Frankfort Messe is being called the tower of German industry. "It is not to be denied," says a leading trade journal, "that the position of German paper at the present time is favorable."—Handel-Zeitung, September 1921.

Overproduction of Paper.

The balance-sheets of the larger paper mills in Europe, especially in countries, like Finland, which do a relatively great export business, show the extraordinary vicissitudes to which the industry seems to be periodically liable. In the case of Finland the sudden closing of outside markets, an accident which should teach shrewd and farseeing men that momentary triumphs ought not to obscure the facts of industrial overproduction, has left the mills with an unwieldy accumulation of surplus stocks. Partly in consequence of this overproduction, partly, too, for other reasons, the largest mill in Finland, the Kymmene, A.G., has severed its connection with the Finnish export cartel, while it is also announced that a new association is contemplated, if not actually in operation with a view to finding wider markets in America and Russia. The exceedingly startling fluctuations in paper exports could not be revealed more strikingly than in Finland's export figures; these are in tons, with 1920 figures in parenthesis:

Wood pulp, 5,365 (31,986); Sulphite, wet 2,006 (1,986); dry 18,366 (29,366); Sulphate, wet, 35 (296); dry, 3,034 (12,986); Newsprint, 35,144 (44,798); Wrappings, 3,459 (11,629); Writing paper 1,153 (2,862); Tissue 355 (931).

To make other markets, since former ones have proved unsatisfactory, Finnish makers have adopted a scheme which will evolve the necessary organization. To this plan all the mills, including Kymmene, have acceded, with its main section known as the "Finnish Paper Bureau," or office of the new "Finnish Paper Union." It is clear that Finnish manufacturers, in nowise dismayed by the set backs to trade, are actively engaged in building up the agency necessary to take over the task of marketing Finnish paper and pulp in all parts of the world.

Prospects of the Paper Industry in Poland.

It is highly probable, according to reports from Austria, that Poland will be able to develop its resources so as to cover the needs of the population in the matter of book and print papers. The country possesses a plentiful supply of the raw materials for paper making, and coal of good quality is also to be had if it is wanted. The new Polish State, however, has few mills and machines in operation. They are enumerated today as follows:

17 paper mills with 33 machines.
1 Pulp mill, and
6 Board mills.

At present the output consists chiefly of fine writing and print papers, ordinary news and packing paper, tissue and cigarette paper, boards of various kinds. The question of whether Poland will continue to depend upon other countries for paper is one which appears easier to answer today than it was, because there is an unexpected movement towards a large scale business with neighboring states, notably Germany and Austria. Poland, it is to be noted, acquired a number of districts which were industrial developments of Germany, and with these a considerable class of skilled workers. In view of the slackness of industry in Norway and Sweden, upon which Poland drew for paper, manufacturers in Germany and Austria are keenly interested in supplanting these and other countries in the Polish markets. They state openly that the prospects of paper making in Poland are "favorable" provided pusiness is allowed to have its way.—Zentral blatt für die Papirindustrie, Vienna, September 1, 1921.

The sulphate mill of the Brompton Pulp & Paper Co. at East Angus, Que., the first of its kind on this continent, has been given a thorough overhauling. Production has been increased to 90 tons per day without installing any new machinery.

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. New Australian Pulpwood. World's Paper Trade Review, lxxv, 25, p. 2216, June 24, 1921. Queensland silky oak is said to be the best Australian pulp so far examined for papermaking. A. C.

A-3. Paper and Industrial Alcohol. World's Paper Trade Review, lxxv, 25, June 24, 1921. Sir CHARLES BEDFORD has contemplated the use of elephant or Savannah grasses and of (chiefly) immature bamboos as a joint source of alcohol and paper, having initiated and directed experimental work on these materials on the laboratory and distillery scale. He mentions rice straw as a raw material. — A. C.

A-3. Bamboo Once More. Paper Making, xl, 6, p. 188, June, 1921. An account of the different processes that have been patented for cutting and crushing bamboo in preparation for treating it chemically. Experiments have proved that a high class paper can be produced from bamboo pulp. A. C.

A-3. Retting Fibrous Straw. Can. patent No. 209,465, JAMES M. MASSON, Duluth, Minnesota, U.S.A., March 15, 1921. The straw is retted by submerging and boiling in a solution composed of 1 fl. oz. per gal. of sulphonated castor oil, 1 oz. of pure alkali and 1 oz. of triphosphate of soda; and is then removed and washed for further treatment. Claims allowed 8. A. P.-C.

A-3. Retting Plant Fibers. Can. patent No. 200,481, LOUIS PEUFAILLIT, Lille, France, March 15, 1921. Fibers from plants intended for being worked in spinning and paper mils are subjected within an open or closed vessel, at a high temperature, to a treatment with a liquid composed of ethylene dichloride, ethylene trichloride, ethylene perchloride, dimethyl tetrachloride or dimethyl pentachloride, cured in pure water, either separately or mixed together. The dissolving substance instead of being dissolved in pure water may be dissolved in solutions of soap, or in oily emulsions, or in water to which is added 3 percent of petroleum. Claims allowed 3.—A. P.-C.

A-11. English China Clay and the American Market. Paper Making, xl, 6, p. 186, June, 1921. English coating china clays make up a very large proportion of all the clay imported into the United States and though it would appear wise for the paper trade to favor a duty on filler clays, since there is no tariff proposed on finished paper, it would be manifestly unfair to the American book paper manufacturers.—A. C.

B-5. Chain Saw. Can. patent No. 209,491, CEPHAS P. SLY, Orchard Park, New York, U.S.A., March 15, 1921. Claims allowed 9.—A. P.-C.

B-5. Power Tree Feller. Can. patent No. 209,475, PAUL B. NEUMAN, Hathersage, Alberta, Canada, March 15, 1921. Claims allowed 7.—A. P.-C.

B-5. Tree Sawing Machine. Can. patent No. 209,482, THOMAS G. PERKINS, Seattle, Washington, U.S.A., March 15, 1921. Claims allowed 8.—A. P.-C.

C-6. Saw Guard. Can. patent No. 209,722, HOMER J. TRAVER, Kerhonkson, N.Y., U.S.A., March 22, 1921. Claims allowed 8.—A. P.-C.

C-7. Suspension Means for Barking Drums. Can. patent No. 209,502, PEDER PETERSON WESTBYS, Peterborough, Ont., Canada, March 15, 1921. Claim allowed 1.—A. P.-C.

C-7. Apparatus for Loosening Bark from Pulpwood. Can. patent No. 209,600, GEORGE P. BERKEY, Appleton, Wis., U.S.A., March 22, 1921. The wood is made to pass through a tank of warm water, and is kept completely submerged during passage through said tank. Claims allowed 3.—A. P.-C.

C-7. Wood Soaking Tower. Can. patent No. 209,530, THE FIBER MAKING PROCESSES, assignee of HERBERT GUETTLER, both of Chicago, Ill., U.S.A., and OLE LUDWIG, Port Edwards, Wis., U.S.A., March 15, 1921. Before being barked, the logs are passed through a tower in which they are sprayed with water or other liquid. Claims allowed 10.—A. P.-C.

D-4. Pulpwood Grinder. Can. patent No. 209,820, JAMES H. BAKER, Saratoga Springs, New York, U.S.A., March 29, 1921. Claims allowed 11.—A. P.-C.

E-2. Sulphite Waste Liquors for Fuel Briquettes. Can. patent No. 209,629, CARLETON ELLIS, Montclair, N.J., U.S.A., March 22, 1921. The finely divided fuel is mixed with finely divided solids of sulphite waste liquor (dried by atomization) and lime, and sufficient water is added to produce a plastic mass. The sulphite liquor and solids react in the presence of the water to form an insoluble binder. Claims allowed 4.—A. P.-C.

E-2. Precipitating Organic Solids from Sulphite Waste Liquor. Can. patent No. 209,881, HANS BRUN LANDMARK, Drammen, Norway, March 29, 1921. The waste liquor is introduced in an autoclave where the sulphonic acid combinations are broken down by means of a strong acid, while the liquor is under pressure. This stronger acid may be produced either previously to or during the precipitation by oxidizing the SO_2 contained in the liquor. The oxidation is produced by introducing ozonized air or oxygen into the autoclave and discharging electric sparks. Claims allowed 2.—A. P.-C.

F-2. Black Liquors from Bamboo. World's Paper Trade Review, lxxv, 22, p. 1938, June 3, 1921. A continuation of the discussion on W. RAITT's paper read before the Royal Society of Arts. Mr. Sindall, in the comments which he added to the paper, deals with the treatment of the black liquor.—A. C.

F-0. Production of Fibrous Material. Can. patent No. 209,444, MARTEN HOFSTE, Amsterdam, The Netherlands, March 15, 1921. Fibrous material is prepared from the stalks and other parts of plants, especially of plants with a hard woody rind or bast, such as ramie, by producing in the vegetable material by chemical means a gas, by which, in addition to the chemical action to which the material is subjected, the fibers are mechanically laid bare. The material may be first treated with an alkali and then boiled in a bath containing about 25 percent of an ammonium salt. Claims allowed 8.—A. P.-C.

G-8. Felting Machine (wet machine). Can. patent No. 209,688, CARL GEBHARD MUENCH, St. Paul, Minn., U.S.A., March 22, 1921. Claims allowed 6.—A. P.C.

K-6. Purifying Cottonseed Hull Fibers. Can. patent No. 209,529, THE EAST ST. LOUIS COTTON OIL COMPANY, National Stock Yards, Ill., assignee of FRANK W. STOCTON, Pittsburg, Pa., both in U.S.A., March 15, 1921. The cottonseed hull fibers are purified by boiling in a 4 percent caustic alkali solution for about five hours, to soften the hull particles, passing the boiled fiber between rolls thereby mashing and disintegrating the hull particles, and finally subjecting the mashed material to a cleaning operation to separate the fine disintegrated hull particles from the fiber. Claims allowed 6.—A. P.-C.

K-6. Cottonseed Fibers. World's Paper Trade Review, lxxvi, 2, July 8, 1921, p. 118. A scheme for extending the use of cottonseed fibers in papermaking. —A. C.

K-7. Beating. World's Paper Trade Review, lxxvi, 2, July 8, 1921, p. 142. The places of disintegration and circulation.—A. C.

K-10. Rosin or Engine Sizing. C. C. SCHNEIDER. **Paper Making,** xl, 6, p. 182. A paper giving general description of process, read at a meeting of the American Pulp and Paper Mill Superintendents' Association.—A. C.

K-12. Knife for Paper making Machine. Can. patent No. 209,907, CHARLES E. POPE, Springfield, Mass., U.S.A., March 29, 1921. Claims allowed 11.—A. P.-C.

K-12. Drainer for Moist Webs. Can. patent No. 209,992, THE SHERBROOKE MACHINERY COMPANY, Ltd., Sherbrooke, P.Q., Canada, assignee of ANTON J. HAUG, Nashua, N.H., U.S.A., March 29, 1921. The patent covers the use of a perforated press roll, the water which is pressed out of the sheet passing through the perforations of the roll. Claims allowed 14.—A. P.-C.

K-12. Electric Drive for Paper Machines. Can. patent No. 209,956, THE CANADIAN GENERAL ELECTRIC COMPANY, Ltd., Toronto, Ont., Canada, assignee of WILBUR L. MERRELL, Schenectady, N.Y., U.S.A., March 9, 1921. Claims allowed 7. (For description see **Pulp and Paper,** xviii, 915-6, Sept. 2, 1920. Abs.)—A. P.-C.

K-12. Felt Cleaning. World's Paper Trade Review, lxxv, 25, June 24, 1921, p. 2214. A British patent has been granted to CHARLES WALMSLEY and Company, Ltd., Bury, and JOHN LAW, Markinch, Scotland, on a process for cleaning felts. In the invention high pressure water in the form of a thin continuous sheet is caused to impinge on the felt of a paper machine to remove china clay, paper fiber and similar dirt from the nap of the felt.—A. C.

K-12. Recent Developments in Papermaking. T. D. NUTTALL. **Paper Making,** xl, 5, p. 140, May, 1921. An account of the developments which have taken place during the recent years, in the width and speed of the paper machine.—A. C.

K-12. Drying Paper. World's Paper Trade Review, lxxv, 24, June 17, 1921. A British patent has been granted to O. MINTON covering a method and apparatus for drying paper and other materials in sheet form.—A. C.

K-12. Suction Drying Roll. Can. Patent No. 209,323, THE DOMINION BRIDGE CO., Ltd., Lachine, assignee of HENRY H. VAUGHAN, Montreal, Quebec, Canada, March 8, 1921. Claims allowed 4.—A. P.-C.

K-18. Fiber Board. Can. patents No. 209,835 and 209,836 MANLEY CHEW, Midland, Ont., Canada, March 29, 1921. Chip waste is steamed, water is added to the mass which is beaten and screened; a hairlike binder is introduced and the fibrous mass is rolled so that the fibers are more or less drawn out longitudinally, agitated in a tank, and fed to the machine. Claims allowed 5 on each patent.—A. P.-C.

K-18. Corrugated Fiber Board. World's Paper Trade Review, lxxvi, 2, July 8, 1921, p. 146. Effect of age on the bursting strength of board.—A. C.

K-18. Indented Fiber Board. Can. patent No. 209,470, CARL GEBHARD MUENCH, St. Paul, Minnesota, U.S.A., March 15, 1921. Claims allowed 5.—A. P.-C.

K-20. Sheet Rubber Liner. Can. patent No. 209,322, THE DIAMOND STATE FIBER CO., Bridgeport, assignee of AUGUST MARTIN EDWIN STRIJEFFERT, Morristown, Pa., U.S.A., March 8, 1921. The patent covers as a new article of manufacture a laminated structure consisting of alternate layers of rubber and a separate covering of relatively tough, pliable, glycerin-treated, chemically parchmentized vegetable fiber, the latter adhering more strongly to one face of each layer of rubber than to the face of the second rubber layer with which it is engaged. Claims allowed 3.—A. P.-C.

K-23. Reenforced Paper Article. Can. patent No. 188,347, PAUL POETSCHKE, Milford, Delaware, U.S.A., Jan 21, 1919. The paper is reenforced by means of a magnesium oxychloride cement and waterproofed by an external application of a waxy water repellent material. Claims allowed 7.——A. P.-C.

K-0. Paper Deterioration in India. World's Paper Trade Review, lxxv, 23, June 10, 1921. Examination of the various libraries in India show that folding the paper once or twice will cause it to break. This perishing as it is called, is due to hydrolysis of the cellulose molecules of the paper and their later decomposition into simple substances rather than to a process of oxidation. The type of paper found to be most resistant in India is a rag paper, the fibres of which have not been weakened in the process of manufacture. Treatment which has been found to damage the fiber is prolonged digestion with alkali, over-bleaching, nonremoval of the last trace of bleach by antichlor and imperfect washing that leaves traces of acid in the paper, while rosin and filling material should not exceed a small fixed percentage. It is recommended that all books and documents of permanent value should be removed to libraries in hill stations with temperate climates, or placed in special buildings in which complete air control can be maintained.—A. C.

L-4. Manufacture of Paper Containers. Paper Container, v, 1, July 1, 1921. The nineteenth article of a series dealing with the manufacture of paper containers.—A. C.

L-4. Corrugated Boxes. Paper Container, v, 1, July 1, 1921. An article completing the description of the various kinds of corrugated boxes referred to in the pamphlet issued by the National Association of Corrugated Fibre Box Manufacturers, U.S.A., — A. C.

L-5. Nitrocellulose from Baobab. Fr. patent No. 504,614. THOMSON, SEVERN and TWYCROSS, April 2, 1918. **L'Industrie Chimique,** vii, 361 (Oct. 1920). Baobab wood possesses the same properties as cotton for the purpose of nitration, for it is composed of almost pure cellulose and is highly fibrous. The fibers when examined under the microscope are quite similar to those of cotton and behave similarly when nitrated.—A. P.-C.

L-5. Cellulose Acetates. Fr. Patent No. 505,608. J. O. ZDANOWITCH, October 31, 1919. **L'Industrie**

(Continued on page 1105)

SEPT. 1921 NEWSPRINT EXPORTS BEAT SEPT. 1920.

Canadian pulp and paper exports for September reached a value of $9,457,027 a decline of $7,033,665 as compared with September 1920 and an increase of $51,636 over the preceding month of August. Exports of newsprint for the month amounted to 1,224,136 cwt. compared with 1,212,225 in the corresponding month last year, an increase of 11,911 cwts. (595 tons) over last year, showing that, contrary to some reports, Canadian newsprint is not losing its foregn markets to European competition, although increased Canadian productive capacity should also be taken into consideration in comparing this year's exports with last. The month's figures indicate a continuous of the steady upward movement which has followed the drastic decline in April, with the exception of the month of June, as shown in the following table:

March	$12,407,476
April	6,946,236
May	7,931,525
June	6,788,932
July	8,666,556
August	9,395,391
September	9,457,027

The month's exports were made up as follows:

September 1920.

Book paper 3,291 cwts.	$ 32,609
Newsprint 1,212,225 cwts.	6,542,179
Other paper	1,280,705
	$7,855,493

September 1921.

Book paper 810 cwts.	$ 9,432
Newsprint 1,224,136 cwts.	5,503,368
Other paper	261,807
	$5,765,607

September 1920.

	Volume	Value
Sulphate Pulp	274,190	$1,398,092
Sulphite, Bleached	222,306	1,999,016
Sulphite, Unbld.	513,526	3,361,048
Groundwood	424,689	1,877,053
	1,434,711	$8,635,209

September 1921.

	Volume	Value
Sulphate	225,515	$ 753,418
Sulphite, Bleached	118,515	492,471
Sulphite Unbld.	238,686	762,439
Groundwood	658,027	1,574,042
	1,239,820	$3,682,420

Countries of destination were: Paper -United Kingdom, $116,591; United States, $5,249,548; other countries, $408,468. Pulp United Kingdom, $1,221,245; United States $2,175,937; other countries, $285,238.

Comparative figures for the first six months of the current fiscal year show:

	Paper	Pulp	Total
1921	$33,379,508	$15,804,159	$49,183,667
1920	43,025,764	14,217,712	87,243,476
1919	27,119,246	16,626,726	43,745,972

Pulpwood amounting to 49,608 cords, valued at $664,420, was exported to the United States in September 1921, compared with 151,541 cords valued at $2,046,864 in September 1920. For the six months period the volume and value of pulpwood exported to the United States was: 1919, 515,444 cords, $5,089,693; 1920, 653,856 cords, $7,803,332; 1921, 421,388 cords, $5,546,785.

BOOK REVIEW.

Chemical Engineering Catalog.

The sixth annual edition of the Chemical and Engineering Catalog is a distinct credit to the Chemical Catalog Company, 1 Madison Avenue, New York City, which originated the idea and has carried it out so successfully as to make this publication one to be anticipated with interest. Its helpfulness to concerns associated with the manufacture and use of chemicals and related equipment, is shown by the circulation of 11,500 copies. There are slightly fewer pages than in the catalog of last year but considering the general business situation, there is distinctly a considerable relative improvement over the last edition. One point to notice is that there has been a steady increase in the number of pages used by each firm which indicates either that manufacturers and others have more goods to advertise or that they are awake to the advantages of properly advising the public of what they have to offer.

The publishers have made some improvements in the make up of the book, particularly in the use of a thinner paper, which reduces the weight of the book by several pounds, and by the use of a flexible pseudo-leather cover which is at once more durable and more pleasing than the former style.

Lest anyone consider that the chemical catalog is simply a composite catalog of apparatus and supplies, we wish to point out the very extensive list of technical and scientific books. The illustrations are good throughout and the very satisfactory appearance of cuts showing photomicrographs, indicates the care that has been taken with the manufacture of the book. Taking it on the whole, we consider that the 1921 edition of the Chemical Engineering Catalog will be of almost daily assistance to the purchasing agent, the engineer, and the manager of any concern using chemicals or the apparatus required for carrying out manufacturing operations based on chemical reactions.

The Catalog is leased at $2.00 per copy, for the period of one year, to those included in the following-named classifications, with the understanding that upon publication of the succeeding volume this copy is subject to recall.

1.—Chemical Engineers, Works Managers, Superintendents, etc.

2. Consulting, Designing and Constructing Engineers in Chemical lines.

3. Chief Chemists of Industrial and Research Laboratories.

4.—Heads of Chemical Departments in Universities, Colleges and Technical Schools.

5.—Technical Departments of the United States and Foreign Governments, and Libraries.

6.—Foreign Chemists and Engineers.

To those not included in the above classes a charge of $10.00 a copy is made for the volume. Eleven thousand five hundred copies of this edition have been printed for distribution.

W. G. MACNAUGHTON INJURED.

The Pulp and Paper Industry will learn with regret, that Mr. W. G. MacNaughton was seriously injured last week in an automobile accident and is now in a critical though not hopeless condition, at the Western Hospital, Montreal. Mr. MacNaughton is well-known as having been a chemical engineer on the staff of the Forest Products Laboratory, Madison, Wis., Chemist for the Inland Empire Paper Company, and Superintendent, while construction was taking place, for the Spruce Falls and Paper Company.

PULP AND PAPER NEWS

The keenest interest is being evinced in pulp and paper circles in the latest development in the affairs of the Riordon Company, Ltd. Through Mr. Carl Riordon, its president, the company has applied to the trustee acting on behalf of the creditors for a year's extension of time for payment of its debts, and a meeting of the creditors has been called for the 17th of next month for consideration of the Company's proposal. The object of this year's extension of time which is being requested is to enable the operation of the Kipawa plant, which was started last Friday, to be continued without interruption. If the creditors decide to grant this extension, the result will be that, by the end of the next twelve months, most of the Kipawa wood pile, if not all of it, will have been converted from soft wood into hard cash, and the Company's total indebtedness will have been reduced by the amount of hard cash realized with the further consequence of a considerable improvement in the prospects of ultimately effecting a satisfactory settlement. On the other hand, if the creditors refuse to accede to the Company's proposal, the present unsettlement will continue, the Kipawa plant will continue to be operated on sufferance, with all the obvious disadvantages that such operation must entail, and with the prospect that at any moment, arbitrary action on the part of a creditor may bring on a crisis and cause a general wind-up of the affairs of the Company.

The reopening of the Riordon Company's Kipawa plant last week is an event of importance to the pulp and paper industry generally. In itself, it is an evidence of an improved demand for sulphite. Further, it looks likely to improve the outlook for that sorely-harassed Company. And, finally, on grounds that are more or less intangible, it will impart greater strength of tone to the whole pulp and paper industry.

Among the exhibits at the Convention of the U. T. A. which covered the entire mezzanine floor of the King Edward Hotel, Toronto, the one which attracted the most general interest was what is claimed to be the smallest paper-making machine in the world. It was seen in operation, and on the first paper produced, invitations were printed for the Mayor and Council of Toronto, and the student at the School of Practical Science and the Technical Schools to view the machine. The machine in question was made in Germany and was smuggled out of the country after the war. Lord Northcliffe wanted to buy it, and offered $25,000 for it, but the American Writing Paper Company of Holyoke, Mass, outbid him and secured it. It is a curious coincidence that the same Company also owns what is claimed to be the world's largest writing paper making machine. Altogether, the number of exhibits amounted to several hundred, including samples of the finest work done by printing firms in all the large centres of the continent.

In a recent article on the Provincial Paper Mills, Ltd., in these columns, the strong position of this Company was pointed out. This is confirmed by the last statement issued by the Company which shows that the Company's position is exceptionally satisfactory in every respect. As is well known, it has the advantage of an extremely efficient administration.

The first of the two actions which Hon. W. E. Raney, Attorney General of Ontario, is bringing against the Shevlin-Clarke Company of Fort Frances, Ont., asks for a declaration that the Company had sold 355,764,303 feet board measure of lumber on which it had paid no Crown dues or bonuses. An amended statement of claim, filed 23rd March last, suggests the basis of settlement at $15 for every tree other than pine, and $25 for each pine tree, cut, or caused to be cut, and carried away, together with the full value of timber and logs so carried away. Wastefulness in cutting operations is alleged, as is the making of "false and fraudulent returns," for the purpose of "enabling the defendants to defraud the Crown out of large sums of money," and "to enable the late Thomas H. Shevlin and the defendants to convert to their own use large quantities of valuable timber." The revocation of certain cutting licenses is also asked for, and in a statement of claim, dated the end of last month, the Crown claims $250,000 damages for timber wrongfully cut on certain berths by the defendants. The defendants, in a statement of defence on the 12th instant, assert that the two Quetico forest reserve berths involved were not sought by them, but had been accepted at the solicitation of the Department of Lands and Forests, with a view to conducting slash-burning experiments on behalf of the Government. They point out certain sums of money, their property, retained by the Government, and state: The allegations and insinuations contained in the statement of claims as to any suggested improprieties in the making of the said contract are false and without foundation."

United Typothetae Of America Convene In Canada.

With the Convention of the United Typothetae of America in session most of last week in Toronto, a great deal has been heard of the strike situation. On exhibition were charts from the Industrial Relations section of the Typothetae showing the progress during the strike. According to these charts, Quebec, Montreal, Ottawa and Toronto are operating at least eighty-five per cent. on the basis of the forty-eight hour week. New York is 66 2/3 per cent. on the forty-four hour week basis, and Chicago is fifty per cent. on that basis, which is also general on the Pacific coast, while in the other centres of the United States the Typographical Union is indicated to be waging a losing fight. One chart showed that 22 per cent of the printing shops of Canada and the United States are only one-man shops; 49 per cent. employ from one to five men; 19 per cent. from six to twenty men; and .0 per cent. more than 1,000 persons. In connection with the question of industrial relations, Mr. F. H. Silcox, in charge of this department, told the Convention that good headway was being made in the fight against the closed shop, and aserted that the cost of living was dropping faster than wages were. His firm, but temperate, references to the successful growth of the open shop principle evoked on outburst of hearty applause which was not without significance.

Many of the discussions of the Convention were of great interest, particularly that on "Education and Better Craftsmanship," on which subject a very trenchant and pungent paper was read by Mr. Harry L. Gage, of New York, who very vigorously criticized the officers of the organization for not taking more interest in attempting to obtain better craftsmanship in the industry.

Before its proceedings came to an end last week the United Typothetae of America published an advertisement signed by its president and other executive officers "branding as absolutely false the statement that the United Typothetae of America is a party to any agreement made between the representatives of any printing trades unions and any employing printer acting in their individual capacity or as members of a division." It further announced that the public's interest is paramount in the policy of the organization, and that it has resisted attempts to increase the cost of printing by a reduction in the present working week of forty-eight hours with its Saturday half-holiday.

At the Convention of the United Typothetae of America the following officers of the organization were elected for the ensuing year: President, Mr. J. Linton Engle; 1st Vice-President, Mr. J. Clark Acton, of Toronto; Vice-Presidents, Messrs. C. K. Horn, E. F. Scribner, and R. B. Nelson; Committeeman from the 16th district, which covers a large part of Eastern Canada, Mr. W. W. Southam, of Toronto.

Mr. John McParland, President of the International Typographical Union, stated in Toronto, last week, that that body would have to consider the advisability of establishing printing plants in large centres to parallel employing printers who were opposing the Union. He added that it would be able to underbid them and to carry their losses through the vast sums at its disposal. He further declared that the attitude of the Union and the forty-four hour week question remained unchanged and that there could be no compromise over this demand.

A big over-Sunday job was recently done at Iroquois Falls, when the Abitibi Mill changed over a chain scraper coal conveyor to a belt type. All the necessary material was on the job and all possible preliminary work done, so there was no interruption to the boiler plant.

A basket ball league was formed at the Abitibi mill, with the following teams—Townsite, Electricians, Paper Mill, Office, Machine Shop. Where are the pulp makers?

Evening classes have started at Iroquois Falls. The most popular class is English in which there are close to a score of non-English learning to read and write the language; there are Italians, French, Russians, Poles and Austrians. They are determined to gain a mastery of the English tongue, and they will. French is also a popular class, most of those taking it being in the offices or having a connection with clerical work. Mechanical drawing, sewing and electricity are also well filled and in all three there will be two classes, a junior and a more advanced.

Steam engineering was slow to start, but applications are now coming in from men who wish to qualify for certificates and this class will start shortly.

The classes are held Tuesdays and Thursdays at 7.30 to 9.30.

MOISTURE STANDARD FOR CHINA CLAY.

For many years the question of a standard of moisture in china clay has been discussed between the producer and consumer.

To arrive at a fair and agreeable standard is not so simple as at first thought it might appear. China clay cannot be dried below a certain percentage of moisture without calcining, and by so doing it becomes useless. Again, if dried below a percentage of moisture which is entirely free from from calcining, the clay loses some of its virtue. This is particularly true in relation to clay in papermaking.

Shipping clay in bulk has of recent years become almost universal, and this again necessitates a fair percentage of moisture being retained to enable transport to be effective without loss through clay powder being blown away. Clay is an absorbent material, and readily acquires moisture from the atmosphere. All these considerations have been well before the producer, who has, we think, on the whole shipped clay to the consumer on a fair and equitable moisture basis. At the same time, some consumers insist that a standard of moisture should be arrived at, and a clause to that effect be inserted in the contract forms.

It may be that producers themselves would be glad to have a standard fixed which should free all parties from an unknown responsibility. But if such may be arrived at, would it be only fair to buyer and producer to pay and receive respectively upon any moisture above or below the standard? For example, should 12 per cent. be agreed as a standard of moisture, then anything over and above 12 per cent. moisture should be refunded to the buyer, anything under 12 per cent. moisture should be paid for extra by the buyer.

To satisfy producer and buyer, this moisture standard should probably be controlled at point of shipment or original truck loading, and a competent analyst appointed whose report would be final.

It will be interesting to have opinions expressed.—"China Clay Trade Review."

Announcement is made by L. B. Holliday & Co., manufacturers of dyes, chemicals, etc., that Mr. Rushforth has severed his connection with this firm and that Mr. H. H. Hartley, 248 Clarens Ave., Toronto has been appointed as representative in his place.

There is encouraging evidence of activity in connection with the Metabetchuan (Que.) Pulp & Paper Co. The engineering contract for the acid plant has been awarded to G. D Jenssen Co., New York.

Mr. Maurice Neilson of the Belgian Industrial Co., has joineed the "newly-weds"; *they* have been honeymooning at Atlantic City.

Mr. E. Barney of the Tagliabue Mfg. Co. of Brooklyn, N.Y., is visiting paper mills in Canada, explaining a device for controlling the temperature rather than the pressure in the dryers of a paper machine.

A French patent, No. 524,103, to Emile Scherret, provides for the application of pressure to the wood in a grinder pocket by means of multiple stage centrifugal pump, direct connected to the pressure piston. The working side of this piston is open to water from the maximum pressure stage, while the return is operated by water from a lower stage.

Complicity with error will take from the best of men the power to enter any successful protest against it.

He who would seek to command must learn to obey.

(Continued from page 1101.)

Chimique, VII, 398, (Nov. 1920). Same as Br. patent No. 139,232, September 18, 1919; U. S. Patent No. 1,347,801, July 27, 1920.—A. P.-C.

L-6. Composition for Moulded Toys. Can patent No. 209,039, ROBERT ASHMORE POGUE, Toronto, Ont., Canada, March 1, 1921. The composition consists of 1 part by vol. of flour, 6 parts by vol. of sawdust and a binder composed of a solution of 1 lb. of glue in 1 gal. of water, to which may be added a small amount of plaster of Paris if desired. The mixture is made into a homogeneous pastelike mass and baked until any stickiness has disappeared. Claims allowed 7.—A. P.-C.

L-7. Tray for Spindles for Spinning Paper. Br. patent No. 509,854, FERNAND JEAN PIERRE STOFFEL, (Seine), France, Aug. 26, 1920. **Papier,** 68-9 (Feb. 1921).—A. P.-C.

L-7. Paper Twine. Can. patent No. 209,871, PERCY REGINALD HOAD, Toronto, Ont., Canada, March 29, 1921. A process for the manufacture of twine from paper consisting in subjecting a strip of paper to a moistening and waterproofing treatment, then crimping the treated strip so as to form a narrow strip composed of a multiplicity of layers, then twisting this narrow strip until its size becomes sufficiently reduced for it to pass through a die producing a desired size twine.—A. P.-C.

L-7. Yarn and Twine from Paper. Can. patent No. 209,994, JAMES SPICER and SON, Ltd., London, E.C. 4, assignee of JOHN SWANZY HARLEY, Waltham Abbey, Essex, both in England, March 29, 1921. Claims allowed 7.—A. P.-C.

L-7. Waterproof Threads. Can. patent No. 209,353, LA SOIE ARTIFICIELLE DE LA VOULTE, assignee of LOUIS GABRIEL RAYMOND AUZENAT, both of Paris, France, March 8, 1921. Threads and fabrics, the tensile strength of which diminishes in the moistened state, are waterproofed by treating the threads and fabrics (a) with vapors of oil of turpentine and acetic acid and subsequently admitting ozonized air or (b) with vapors of phenol and subsequently with vapors of formaldehyde, or (c) with vapors of phenol and subsequently with vapors of formic acid and formaldehyde. Claims allowed 5.—A. P.-C.

L-0. Mats from Wood Fibers. Can. patent No. 209,952, THE C. F. BURGESS LABORATORIES, assignee of HOWARD F. WEISS, both of Madison, Wis., U.S.A., March 29, 1921. The patent covers, as a new article of manufacture, a fabric of wood fibers cemented together by an adhesive solution containing starch and having a resilience such that its volume under normal conditions is less than 0.40 Gm. per cu. in. and under a pressure of 1 lb. per sq. in. its volume is reduced to 1.60 Gm. or more per cu. in. Claims allowed 14.—A. P.-C.

M-4. Alarm for Rope Drives. Can. patent No. 188,201, ALFRED PATRICK DEVINE and JOHN LATREILLE, Fort William, Ont., Canada. Claims allowed 3.—A. P.-C.

M-0. Standardizing Papermaking Machinery. World's Paper Trade Review, lxxv, 23, June 10, 1921. An article on developments in modern paper mill engineering. The opinion is expressed that if only paper makers and users of paper could combine a little more, much could be done towards standardization of papermaking machinery.—A. C.

N-4. Turbine Furnace. Paper Making, xl, 6, p. 172, June, 1921. An article describing the turbine furnace, manufactured by the Turbine Furnace Company, Ltd., 5 Bridge Row, London, E. C. 4, whereby a constant and uniform flow of air is circulated throughout the whole grate area, remedying slow steam raising, waste of fuel and laborious stoking.—A. C.

Q-0. Industrial Housing. Pulp and Paper, xix, 239-42 (March 3, 1921). Hints on the designing and construction of houses for pulp and paper mill workers, when it is advisable or necessary for the company to erect them.—A. P.-C.

R-1. Woodpulp Manufacture in Sweden. L. PIERRON. **Rev. Chim. Ind.,** xxix (Oct. 1920); **Papier,** xxiv (Feb. 1921). Brief review of the production of sulfite, sulfate, and mechanical woodpulp in Sweden, and of the utilization of sulfite waste liquors for the production of binders, adhesives, tanning extracts, ethyl alcohol, fuel, cattle feed, fertilizers, dyes, and mordants.—A. P.-C.

R-11. Fitting the Foreman for his Work. Pulp and Paper, xix, 267-9 (March 10, 1921). An analysis of the the importance of training the foreman in the executive duties of his position and of the courses given by the Business Training Corporation of New York to this end; together with a few examples of what such training has actually accomplished in the case of foremen in the paper industry.—A.P.-C.

R-11. Research Department for Paper Industry. Pulp and Paper, xix, 127-30 (Feb. 3, 1921); 159-62 (Feb. 10, 1921). Text of the report of the Joint Committee (Col. C. H. L. Jones, Spanish River Pulp and Paper Mills, chairman) appointed by the Canadian Pulp and Paper Asociation and the Technical Section of the C. P. & P. A. to investigate possibilities respecting the institution of a department of technical research within the activities of the C. P. & P. A., of the ensuing discussion and of the address of Dr. R. F. Ruttan on the cooperation of the Research Institute with the pulp and paper industry. Both the Technical Section and the C. P. & P. A. approved of an immediate start being made with the industrial research department, without attempting to build a central research laboratory at once, the main work to begin consisting in the coordination of the research being carried on in the various mills.—A.P.-C.

R-13. Transactions of the Technical Section of the C. P. & P. A. Pulp and Paper, xix, 73-82 (Jan. 20, 1921); 127-30 (Feb. 3, 1921); 159-62 (Feb. 10, 1921); 189-91 (Feb. 17, 1921); 217-9 (Feb. 24, 1921); 245-6 (March 3, 1921); 271-4 (March 10, 1921); 299-300 (March 17, 1921); 323-4 (March 24, 1921); 347-9 (March 31, 1921); 375-7 (April 7, 1921). Texts of the reports of the committees on mechanical standards, chemical standards, education, testing moisture in pulp, abstracts and publications, technical research; together with discussion of reports, of the revision of membership qualifications so as to admit superintendents and practical men as full members, and of the following papers presented at the convention: "Insurance of Pulpwood" (**Pulp and Paper,** xix, 323-4, March 24, 1921); "Protection of Log Piles by Artificial Fog" (**Pulp and Paper,** xix, 5-7, Jan. 6, 1921; 37-9, Jan. 13, 1921); "Speed Inter-Lock as Applied to Paper Machine Drives" (**Pulp and Paper,** xix, 59-64, Jan 20, 1921); "The Ventilation of Paper Machine Rooms" (**Pulp and Paper,** xix, 183-8, Feb. 17, 1921); "Strength Testing of Sulphate Pulp" (**Pulp and Paper,** xix, 68-72, Jan. 2, 1921; and also paper presented by I. L. Gartland on "The Microscope and its Relation to the Pulp and Paper Mill" (Pulp and Paper, xix, 347-9, (March 31, 1921; 375-7, April 7, 1921).—A. P.-C.

UNITED STATES NOTES

Interests headed by Hugo Stinnes, Germany's colossus of industry and the greatest newspaper owner in that country, have invaded the American newsprint market with two and a half cent a pound paper. This paper is being offered in New York by a representative of the German paper interests. Paper of standard specifications will be delivered Atlantic or Gulf ports c. i. f. on thirty day terms. Large enough quantities will be shipped to America to insure a supply adequate for a month's demand for the New York newspaper publishers.

The California State Board of Forestry has obtained an option to purchase 394 acres of timber in Humboldt County in accordance with a conservation act passed by the last California legislature. Selon H. Williams of the forestry board in announcing the deal, said the purchasing price is put at $65,000.

Whether Alaska with its large tracts of timber lands so far practically untouched can be made a source of papermaking to help take place of the rapidly dwindling resources in the states, is arousing considerable discussion. The United States forestry service is urging establishment of mills in the northern territory and several are already projected in the Tongass forest district. Much doubt is expressed by paper manufacturers that paper from Alaskan wood can be used profitably for paper sold in eastern United States, in view of the long freight haul. It would necessitate coming into competition with paper manufactured from wood cut in the Eastern Canadian provinces and Scandinavian paper. These conclusions regarding the feasibility of utilizing Alaskan pulpwood in paper making are summed up in a survey recently completed by the American Pulp and Paper Association.

Hunting forest fires from airplanes, which has proved one of the most effective methods of reducing fire loss of timber, is about to be discontinued after several seasons of use because the army air service will no longer lend its planes and pilots for this purpose. The aerial forest patrol is still in existence, but an order has gone forth for its discontinuance this year.

The problem of preserving for posterity important newspaper files, which, since wood pulp superceded rags, in the manufacture of newsprint, has baffled librarians all over the world, at last apparently has been solved by officials of the New York Public Library. After seven years of experimentation, backed by the cooperation of three New York daily papers, each of which has spent $5,000 to find the best preservative method, the officials believe they have discovered the correct solution, that of mounting each newspaper sheet between two sheets of Japanese tissue. The files of the New York Evening Post are now being preserved by the new method. This shuts the original sheet from the air, reduces its legibility but slightly, strengthens the page and permits its free handling without danger of disintegration.

Geographically speaking, New Orleans and Brooklyn, New York, are very far apart, but the genius and the capital of a group of Brooklyn citizens are destined to bring them close together in an enterprise that promises to revolutionize the production and manufacture of paper. Okra, a vegetable plant grown extensively in Louisiana, is the product their chemists and engineers are utilizing to take the place of wood pulp. The National Pulp, Paper and Cordage Company, is to be the firm name of the corporation formed by the Brooklyn men, and it has already established just across the river from New Orleans, an up to date plant which it owns outright. This plant is said to be capable of turning out 25 tons of paper daily. The property adjoins that of the Texas Oil Company, which supplies fuel oil directly through a pipe line into the paper mill boiler room. In addition the company owns 1,200 acres of land within motor transportation distance of the mill for the cultivation of okra, and has leased a 350-acre okra plantation in the vicinity of the mill. Experiments of the chemists have resulted in the discovery that the outside fiber of the plant has an excellent substitute for cordage, burlap, matting and such things. The wooly portion of the stalk produces a high grade pulp, superior to the wood pulp. This, according to the company is shown in a letter from the physiologist of the Bureau of Plant Industry in which it is stated that the samples of paper sent him by the company proved to be of fair folding and tensile strength, if anything, even slightly superior to the usual book paper with which it was compared. Its elastic qualities were also favorably mentioned. Foremost among the men pushing the new concern is Patrick Trainor, president of the P. Trainor Company, boilermakers. Mr. Trainor is the company's president. Others interested are: Frank A. Hawxhurst, of the Brooklyn Blue Print Works, who is treasurer; Chester W. Dibble, of the McCraw-Hill Company, publishers; George Donohue, Fred E. Hilliard and Louis W. Juhring, all well known New York business men. S. S. Bagot, who now makes his home in New Orleans, is secretary, and Louis W. Fehning, a New Orleans man, is general manager.

While surrounding States have been hard hit by damaging forest fires this year, Wisconsin has been singularly fortunate in the respect that it has been visited by very few. The patrols and rangers have been extremely vigilant and the state conservation commission has been keeping close tabs on fires and has brought its warnings urging caution to the attention of hunters and campers in specific instructions and notices.

T. Yamachita, chief engineer in the Japanese government paper mills, is in the United States on a tour of inspection, observing mills methods with a view to taking back with him ideas for effecting improvements in Japan's paper making establishments. Mr. Yamachita has visited mills in the Middle West, and he intends looking over the principal plants in the United States and Canada before he concludes his tour. Discussing conditions in Japan, Mr. Yamachita said that business has been gradually going down, that some of the mills are suspending operations and that many more are going into bankruptcy.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 22nd Oct. Slowly but surely the whole of the industry continues to improve. The general policy, for the present, has, for one of its principal aims, if not, indeed, the principal aim of the moment, the stabilization alike of production and of prices. And, in both directions this policy is meeting with a gratifying measure of success. Mills are becoming progressively busier. Indeed, quite a few, including some newsprint mills, and one large kraft concern are working to full capacity. Others which last month were working at seventy per cent. are this month, working to eighty per cent. of capacity. And so it goes nearly all along the line. Orders are coming along with a markedly increased and increasing briskness. Representatives of three large mills, selected almost at random, told the writer, this week, that orders of sufficient volume to keep the plants of their respective concerns busy till the end of the year wer in, and that, when these were filled, the orders that are in sight would be heavy enough to ensure satisfactory business for a considerable further period. The truth is that confidence is being—indeed, to a large extent, it has already been—re-established. There is a good deal less scepticism today, than was in evidence even so recently as a month ago, as to the reliability of the assertion that prices are now finally at rock-bottom. Any price revision that occurs now will probably be in an upward direction. Indeed, from information received by the writer today, it would not be wholly a matter of surprise if, in two lines, a revision of prices upwards were to take place almost immediately. But, with these possible exceptions, prices are likely to remain at their present level until the New Year. With such a much more stable tone to conditions than obtained, say, three or four months ago, it is not surprising that orders are coming along with greater freedom and of larger size. For it is an incontrovertible fact that consumers, in nearly all lines, had allowed their stocks to become quite extraordinarily depleted. Like Mr. Micawber, they were "waiting for something to turn up." And now that it looks pretty sure that whatever that "something to turn up" will be, it will not be lower prices, they are showing an unmistakable disposition to govern themselves accordingly and replenish their stocks. The change that, in a little over two months, has gradually come over the psychology of those engaged in the industry is very striking. Almost unanimously, the view is held that next year will be a year of solid if modest, prosperity, with nothing about it likely to be meteoric, in the way of a boom, but one of stable, if not dazzling, business.

PULPWOOD. There is no reason to alter or modify the opinion, more than once expressed in these columns, that the pulpwood cut this season will be unusually small. Nearly all the paper companies have large stocks on hand, and the same remark applies to lumbermen. An exception to the general rule of the paper companies going in for a smaller cut is probably to be found in the Abitibi Pulp and Paper Company, which concern owing to the large increases in production which it has assured, will probably go in for woodcutting operations on a considerable scale. Help in the woods is not only immensely cheaper than last year but also abundant and far more efficient.

PULP.—The pulp market is still listless. But there have been some indications of an increase in the demand for kraft pulp, while the reopening of the Riordon Company's Kipawa plant is taken to indicate an improved demand for sulphite.

NEWSPRINT.—The lower prices for the current quarter in newsprint are having a stimulating effect on conditions. As regards the export of this commodity to the United States, it is stated that the contracts now being negotiated for next year's supply show no decrease in the demand for Canadian paper.

BOOK PAPER.—Mills are doing a satisfactory business and the demand for book paper continues to improve.

BONDS AND WRITING PAPERS.—Business in bonds, ledgers and writing papers is picking up slowly but surely. Orders are coming in better and the mills are gradually increasing their output.

WRAPPING PAPERS.—There is a satisfactory increase in activity in practically all lines of wrapping papers. Particularly is this noticeable in respect to kraft, the situation in regard to which has been becoming increasingly favorable for several weeks, as has been mentioned in these columns from information obtained directly from representatives of the largest mills manufacturing this grade of paper. About a couple of months ago, the tide showed signs of definitely taking a favorable turn, according to information received then from the representative of one such mill, and, ever since, week by week, an improvement has been manifested until today the outlook can be pronounced to be not merely good, but very good.

WASTE PAPERS.—Nearly all grades of waste paper show an improvement in demand, with the market exhibiting a satisfactory firmness. This is, in fact, one of the gratifying features in the generallly improved situation. not only in itself, but also for what it augurs.

RAGS.—Roofing rags are a good deal firmer and increases in both volume and size of orders are reported. There is a considerably improved undertone to the market in domestic rags.

TOILETS AND TISSUES.—Manufacturers of toilets and tissues are undeniably optimistic. One manufacturer told the writer that his mills are running to capacity, and he expressed the view that other mills were experiencing the same condition.

NEW YORK MARKETS.

New York, October 22.—Special Correspondence.—In one sense, the threat of a country wide railroad strike has served to enliven the demand for paper to an extent; in another way, it has made for a quiet market. Consumers and jobbers in quite a few instances have exerted efforts this week to augument their stocks of paper, and have consequently placed hurry orders with mills for deliveries as rapidly as possible which they probably would otherwise have held off in placing were it not for the strike outlook. This naturally has led to increased business in paper and board in some quarters, whereas in other cases buyers have purposely held back in operating in the market, presumably feeling that should the strike become effective and last for any length of time that the only result on the paper market would be to send prices down.

Sentiment generally in the trade in New York is that the strike will not materialize. Paper merchants here are of the opinion that some way will be found out of the difficulty because they feel that the Government is flatly opposed to the proposed strike, and also that the present is a most inopportune time for such labor movement in view of the vast number of unemployed and the general dullness affecting industry. In consequence of this opinion, the effect on the paper market thus far has been more of a quieting character than in stimulating demand. However, business of comparatively broad scope is current. Consumers in common are absorbing fair amounts of paper from mills, and are slowly though consistently increasing the volume of their orders, this being done because they are in greater need of paper. On the whole, the industry is still abnormal, but trade authorities are almost a unit in saying that business is steadily improving, that the situation is distinctly healthy and that matters are such as to offer much encouragement.

The movement of newsprint from producing plants into consuming channels continues to broaden, and reports state that print paper mills are running at close to capacity and are shipping out even larger tonnage than they are now manufacturing, which means mill stocks are being gradually reduced. Newspapers are still increasing the size of their issues, owing, of course, to more advertising, and with the election drawing near and the pre-holiday shopping season not far off, everything is in favor of a continued increase in consumption of newsprint during the next several months. Prices are steady; in fact, steadier than they have been in a long time, and there are some connected with the trade who are so bullishly inclined that they are talking of higher prices for newsprint by the end of the year. Spot lots of standard news in rolls are selling at around 4.25 cents per pound at the mill, and now and then one hears of a sale at better than this figure, although on the other hand, some producers are marketing newsprint among transient buyers at about the same basis as is quoted to contract customers, namely 4 cents a pound f.o.b. mills.

Business in fine papers shows consistent growth, and mills making bonds, linens and ledgers are busier than in many months. According to reports, there is scarcely a writing paper mill in the States which is not operating, and while some of them are on part time, a majority are securing sufficient business to warrant almost full production. Quotations on fine papers are stiffening, and while no sharp advances have occurred, buyers nevertheless find it necessary to pay quoted prices to procure supplies.

Another pleasing development has been the increase in demand for building papers. This is not surprising in view of the large amount of building construction going on all over the country, which for a while was not reflected in the paper market owing to the large stocks of felt and roofing paper in stock but which is now making itself felt to no small extent. Building paper mills are running at larger capacity than probably at anytime this year and are finding a ready outlet for their product.

Book papers hold firm in price and are moving in substantial tonnage. Tissues are in good demand and quotably steady, and wrappings are enjoying a lively demand, this being the season when wrapping papers are in relatively larger demand than at any other time of the year. Moreover, the advancing trend in raw material is causing manufacturers of wrapping papers to quote firmer prices. Both kraft pulp and old kraft paper stock is strengthening in price, which makes it necessary for producers to obtain better prices on finished kraft papers.

The board market is moderately active. Prices are on the upgrade and consumers are absorbing supplies in regular fashion. Plain box boards are selling at between $38 and $40 per ton f.o.b. New York on chip board and around $42.50 a ton on news board. Other grades, such as folding box boards and corrugated boards, are stiffening in price under a heavier movement toward consumers.

GROUND WOOD.—Although quotations on mechanical wood pulp show a strong tendency, no actual changes of note have developed in prices this week. Grinders are firm in their ideas regarding prices and are insisting on figures at close to the top of quotational ranges when making sales, yet the bulk of current transactions are at around a basis of $30 per ton f.o.b. producing plants for domestic spruce ground wood. In some cases higher prices are being obtained, but in these instances the consuming mills are invariably situated near to producing plants, so that such buyers are paying no more than consumers who are far from grinding points and who are procuring pulp at a lower f.o.b. producing mill basis. Reports from grinding sections continue to tell of unfavorable water conditions; in fact, it is stated that in many cases mill streams are lower than at any time thus far this year, which is materially hampering manufacturing operations and thus reducing available supplies. This is seemingly the strongest factor in the market although increasing demand is also having its influence.

CHEMICAL PULP.—On the whole, reports tell of a fairly good movement of chemical wood pulps into consuming channels, yet members of the trade generally acknowledge demand lacks the volume of more normal times. Paper manufacturers are buying freely when in want of pulp, and it can be said that the average paper mill is requiring larger amounts of raw material every day, yet there is a decided indisposition evinced toward buying against future needs. Bleached sulphite is in steady call. One of the largest domestic producers is said to be operating at present at 92 per cent of capacity and to be shiping out pulp at the rate of 132 per cent of normal capacity, meaning that it is removing considerable stored sulphite. Another prominent manufacturer of bleached sulphite is reported sold up for several months ahead. The price prevailing on strictly No. 1 domestic bleached sulphite is 4.25 cents f.o.b. pulp mill, with secondary grades ranging down to 4 cents per pound Kraft is steady at between 2.75 and cents a pound at pulp mills on domestic kraft, and from 2.50 to 2.75 cents ex dock on foreign kraft. Foreign No. 1 unbleached sulphite has sold rather freely this week at around 2.75 cents a pound ex the dock, while domestic news grade sulphite is moving in a regular way at 2.50 cents.

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INQUIRIES SOLICITED:

RAGS.—The rag market rules firm and further advancement has been recorded in prices on several grades. Probably the strongest item at the moment is roofing stock. Sales of No. 1 roofing rags have been made by New York dealers to mills at 1.20 cents a pound f.o.b. this city, and of No. 2 packing at 1.10 cents, while reports from the Middle West tell of sales there as high as 1.50 cents at dealers' points for No. 1 roofing Felt mills are buying actively and are gradually raising their prices. Old white rags also are exceptionally firm, with reports stating that No. 1 repacked whites are bringing 6 to 6.50 cents, and street soiled whites around 1.65 cents. New white shirt cuttings are quoted at stiff prices, dealers in frequent cases asking 11 cents a pound, though mills are reported filling most of their requirements at 10 to 10.50 cents.

PAPER STOCK.—Consuming demand for old paper has eased off to some extent this week, this being attributed by authorities to the impending railway strike because most mills that have let up in their buying are in the West and a far distance away from New York, yet prices hold firm and there is as yet no sign of any weakness in values. Packers are very strong in their insistence on full quoted figures, using the scarcity of most grades of waste paper to support their contention that they must get the prices asked in order to operate profitaby. Shavings are quoted at between 3.50 and 3.75 cents a pound f.o.b. dealers' points on No. 1 soft white, and from 4 cents upward on No. 1 hard white shavings. Old books and magazines are held for around 1.65 cents, and ledger stock is quoted at 1.75 to 2 cents a pound. Prices named by dealers in this city on other grades range around the following figures: Mixed ooks and magazines, 1.25 cents; No. 1 manilas, 1.10 cents; No. 1 old kraft, 2.25 cents; overissue newspapers, 90 cents a hundred; folded newspapers, 70 cents; No. 1 mixed paper, 55 cents; white blank news cuttings, 2 cents.

OLD ROPE AND STRINGS.—Dealers as a rule are refusing to accept orders for sizeable lots of old manila rope at less than 4.75 cents a pound at shipping points, and claim to be obtaining this price without difficulty. Old bagging is in better demand and is selling at an average of 90 cents per hundred pounds for No. 1 scrap bagging, and slightly over one cent a pound for gunny bagging.

If you are content to drift lazily, you'll by and by find yourself at sea.

JENSSEN ENGINEERING PRODUCTS ORGANIZED.

This Company has been organized to handle various kinds of paper and pulp mill machinery and specialities, and has absorbed the business of the Power Equipment and Supply Co. which is now incorporated with the Jenssen Engineering Products Limited. This firm is planning to handle all kinds of paper mill equipment, and to render at the same time engineering services. They are cooperating with well known engineering experts and shall therefor at all times be in a position to render the best possible engineering services. They are also prepared to act as purchasing agents for mill supplies for firms that might wish such a service.

The personnel of the Company are all well known to the trade; Mr. L. N. Jenssen, who has been for years in the construction business, is a well known engineer, and his associates and he have had extensive experience in the various departments of construction and mechanical equipment. Mr. J. C. Corcoran, who was for years connected with the Rice, Barton & Fales Co., and was later connected with the Dominion Engineering Works, is a well known engineer and salesman connected with the paper trade, and many of the improved methods now employed in the trade has been brought to the attention of our pulp and paper makers through his endeavors. Mr. F. W. Ward and Mr. J. A. Smith, who are the proprietors of the Power Equipment Co., are well known to all the engineering and contracting firms of Canada, and have had large experience in the building and equipping of various mechanical plants which are now in successful operation.

The personnel of this company should assure it of success as their engineering abilities and experience will enable them to render their customers the very best of service in assisting them to solve their problems, and finding the most suitable equipment and working methods in each case.

The Directors of this concern consist of Mr. L. N. Jenssen, Mr. F. W. Ward, Mr. J. A. Smith, and Mr. J. C. Corcoran, and the Board of Directors have elected as officers of this concern, Mr. L. N. Jenssen, President and Treasurer, Mr. J. C. Corcoran, Vice-President.

LITTLE SPARKS.

Little sparks from bonfires,
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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., November, 3, 1921.** **No. 44**

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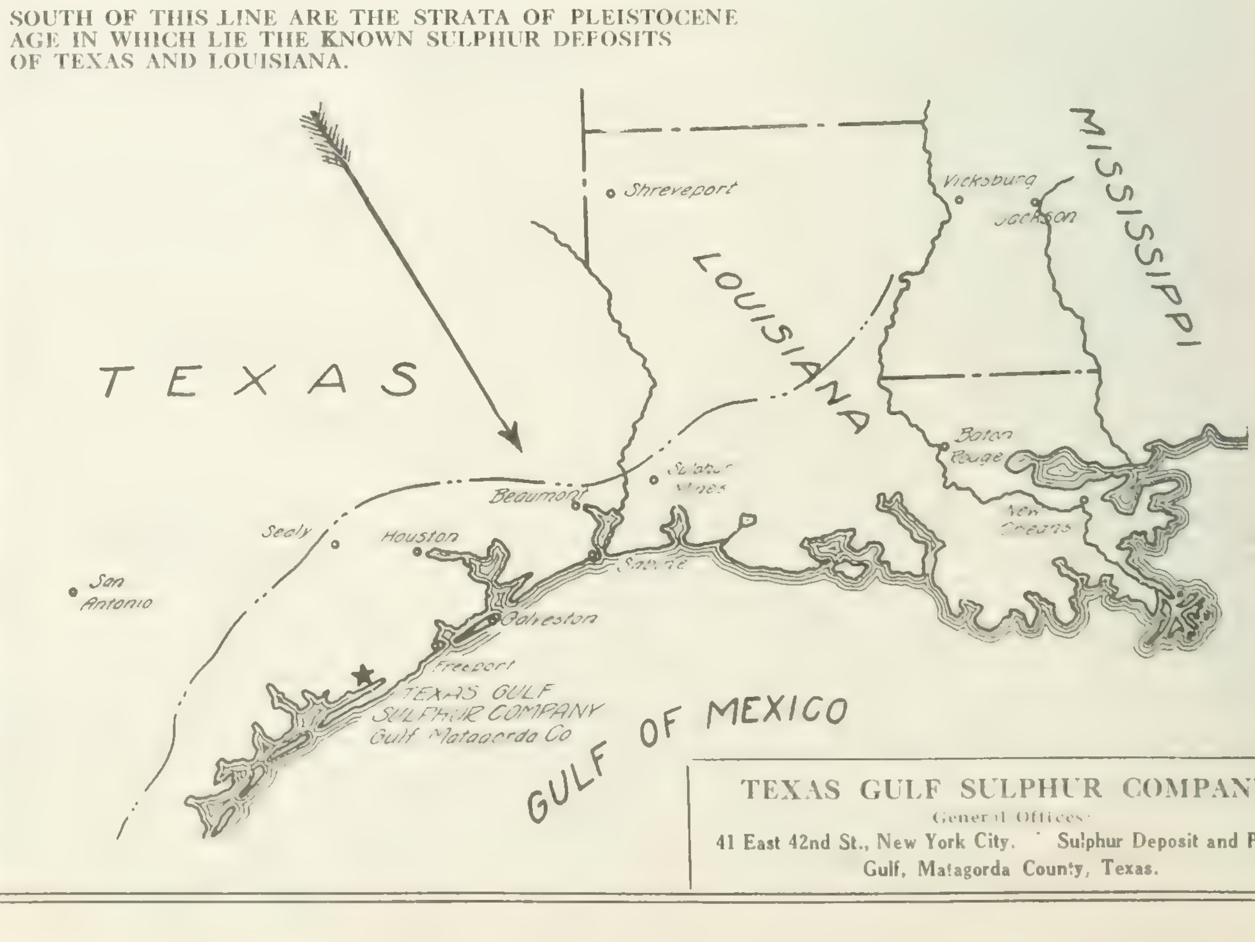

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EDITORIAL

NOVEMBER ELEVENTH.

Remember the sacrifices that made Peace possible.

Pray for the conference that can make Peace permanent.

THE GENERAL ELECTION.

By the Associate Editor.

The general election campaign, in the throes of which the country finds itself at the present moment is one of exceptional interest and importance. For the first time in the history of Canada, since Confederation, three separate parties, each with an accredited leader, electioneering machinery, and a formulated program, of its own, will be contestants for place and power on the day of polling. They are: the present Government, the Liberals, and the Progressives.

This unique feature of the forthcoming contest, in itself, renders the latter of unprecedented interest. It makes the campaign, in various ways, more complicated and more complex, and more pregnant with possibilities of alignments and alliances of far-reaching import, than any election of which we have hitherto had experience in this country.

One of the dominant issues in the campaign is the fiscal issue. Indeed, according to the Government press, this is the only issue. But, naturally, neither the Liberals nor the Progressives agree to this view. For, in the very nature of things, the record of the Government which is appealing to the constituencies to sustain it in office, must also perforce, be one of the leading issues. However, the fiscal issue is, as we have said, undoubtedly one of the dominant issues to be decided at the polls.

As it happens, the fiscal question is one with regard to which the attitude of any party is peculiarly liable to misrepresentation by that party's opponents, — and such misrepresentation need not, necessarily, be wilful and deliberate. For, in Canada, today, that issue is not, and cannot be, defined with absolute and uncompromising sharpness, as it could be were the issue that between unequivocal Protection, on the one hand, and unequivocal Free Trade, on the other. In the present contest, none of the three contending parties stands for out-and-out Free Trade at the present moment.

Nor is this, in any way, surprising. It must be borne in mind that, for many years now, the accepted national policy—we are not, of course, here using that expression in the party sense in which it is often used—in fiscal matters has been a tariff policy. It is true that the Conservatives frankly avow their faith in a tariff as an instrument of Protection, as a weapon to be used for purposes of defence, if not of defiance. It is, further, true that the Liberals, by tradition, acquiesce in a tariff for purposes of revenue. But is is also true that, in the past, the tariff, as it has hitherto operated in Canada, has not, whether framed by Liberal or by Conservative bonds, shown, on its face, any radical indication as to whether the hands that framed it were actuated by frankly protective, or merely "tariff-for-revenue" motives.

But while all this is true as regards the tariff, as we have had experience of it in actual operation in Canada, it does not fairly indicate the difference between the fiscal policy of the two historic parties today. Now, as of yore, the Conservatives desire to maintain an avowedly protective tariff—and they point to that in operation under the last Laurier administration as a tariff of that nature. But the Liberal fiscal policy went a good deal further than the tariff in operation when the last Laurier Government, by reason of circumstances beyond its own control, went out of office. Speaking in Halifax, last Friday, the Hon. W. S. Fielding, ex-Minister of Finance, made it plain what was the Liberal fiscal policy when that party left office. "Turn back," he said, "to 1911 and the policy of the Liberal party. In the tariff as it stood at that day, with the amendments that were contemplated when the Liberals went out of power, you will find the elements of a sane tariff policy — not the finished edifice, but the groundwork and the framework of a sound tariff policy."

Thus the Liberal tariff policy was not, in 1911, represented by the tariff as it stood in that year, but by that tariff, plus certain fiscal proposals that were then being put forward for its amendment. That policy the Liberals, being swept from office, were prevented from making effective. But the amendments proposed were of a far-reaching kind. We are not going to attempt to discuss them here, further than to say that their addition to the tariff as it stood in 1911 would have rendered the Liberal fiscal policy far more conformable with the Liberal fiscal theory of a tariff for revenue purposes only than any fiscal policy which has been carried into effect in Canada since first we had a tariff of any kind.

Thus we have shown—or tried to show—the main distinction between Conservatism and Liberalism on the fiscal question. If it be said that both parties are agreed on the necessity for tariff revision, the ground is not really shifted—the distinction still remains. For the revision which the Liberals desire is a general one downwards. That is not the sort of revision which the Conservatives contemplate.

What, then, of the third party—the Progressives? Their ultimate ideal is Free Trade. But they are pledged against any sudden subversion of the fiscal system of the country such as would be involved in the immediate adoption of that policy. None the less, were they to obtain a clear majority in the next Parliament tariff revision, at their hands, would probably be more sharply in a downward direction than it would be at the hands of the Liberals.

As things look at present, no one party of the three is likely to get a clear working majority in the next House of Commons. "The King's Government must be carried on"—that is a maxim of our constitution modeled, as it is, on the British constitution. Working arrangements between parties—whether by way of coalition, or of more or less formal alliance—will probably have to be made. The question is: Between which parties; or (possibly) Between which party and which section of which party?

The whole subject is a piquant and "intriguing" one. It is one to the consideration of which we intend to return at an early date.

MR. KEENAN RETURNS TO THE FOLD.

Whether the editorial fold is to be of white or of black sheep, Thos. J. Keenan is back in it, and again occupies the Editorial chair of *Paper*. He was editor of this well known and important journal for many years, and, for six years also carried on as secretary of the Technical Association of the Pulp and Paper Industry, which he was instrumental in organizing. During the past year Mr. Keenan has devoted his time exclusively to the work of the Association and will doubtless find the experience and the intimate contact thus obtained with the men of the industry of great benefit to him and, indirectly, to the many readers of his paper. We are glad he is back, and wish him all success. Paper and the Pulp and Paper Magazine have their own peculiar (perhaps in both senses) ways of serving the whole industry and have always tried to be mutually helpful.

IT CAN'T BE DID.

Our esteemed contemporary, the Shawinigan Falls Review, in a recent issue, said, referring to the textbooks, "Volumes 4 and 5... will be out before the end of this year."

It is good to be optimistic, but this statement borders, in fact intrudes, on the imaginative. In the first place, it has been impossible for some of the authors to complete their manuscripts, and some sections can't be finished till others, which are preliminary, are in hand. Then there are such incidental, but time consuming operations, as editorial work, preparation of illustrations, setting of type, proof reading (both in galley and page forms), making of cuts, printing, and binding. These things can not be done by the waving of a wand—not nowadays.

The work is proceeding as rapidly as a conscientious and industrious staff can do it properly, but volumes 4 and 5 will not be out this year. It can't be done. We *hope* to have volume 3 out, though.

COBWEBS.

By the time navigation in the St. Lawrence closes, more grain will have been exported from Montreal than from all other Atlantic ports combined. Montreal's shipping is greater than for any other American port except New York.

"If a man kan't laff there iz sum mistake made in putting him together, and if he won't laff he wants az mutch keeping away from az a bear-trap when it iz sot." —Josh Billings.

While we are more confident than ever that the tide of industry has turned, it must be remembered that only in two or three exceptional places in the whole world is there a tide even remotely similar to that in the Bay of Fundy. Fortunately, the tide usually comes in gradually and steadily. That is evidently the way the tide of business is rising.

Mr. Graf is doing the industry a fine service in trying to arouse more interest in the matter of mill photography. This is far more important than might be supposed. It can be made still more important and helpful by an organization of photographers so they can work out common problems and develope new lines of progress.

Reprints: The series of articles by Dr. J. S. Bates on the Use of Decayed Wood and Prevention of Rot in Pulp is now available as a reprint at 25 cents a copy.

Prof. Lloyd's article on The Structure of Cereal Straws has been reprinted. Copies are 25 cents each.

THE GOOD WORK GOES ON.

Mr. J. F. H. Wyse, General Manager of the Safety League has received the following letter from Mr. A. H. Sirks, Chief Commissioner of Police, Rotterdam, Holland:—

> "On an exposition at the Safety-museum at Amsterdam, I saw your traffic bulletins No. 17 and No. 28. As dutch people yet need a great lot of education in traffic matters, I should appreciate highly to get in possession of material in this question for policemen's instruction and propaganda (f.i. showing lantern plates in cinemas).
>
> "Will you be so kind as to inform me on which conditions I can secure myself different bulletins of your society, as shown on the above mentioned exposition.
>
> "On thanking by forehand for your kindness,
> I remain, Dear Sirs,
> Yours very truly
> "A. H. Sirks"
> Chief Commissioner of Police."

The League is sending the Chief Commissioner a large amount of Safety literature.

Advances in the Practice of Lubrication[*]

By HENRY M. WELLS
and JAMES E. SOUTHCOMBE

The considerations which we wish to bring forward in this paper are the results of many years' experience of the problems of lubricating oil and lubrication, studied from a physico-chemical standpoint, assisted by an intimate and daily contact with the lubrication of all types of machinery and prime movers. Our primary object was to elucidate the reason for the obviously superior lubricating efficiency of fatty glycerides over "straight" mineral oils in a large number of practical cases which had come to our notice.

As a corollary to this we had to review the physical principles upon which lubrication depends and to seek an explanation of the peculiar property which has been called "oiliness," "body," etc., by authorities in the past.

It may not be out of place here to review the position of our knowledge of lubricants and lubrication.

Professor C. V. Boys, in his Presidential address to the Physical Society in 1908, crystallized the position very happily in these words:—

It was found that the lubricating property of oil depended on something which at present is unknown—It is not viscosity—animal and vegetable oils lubricate better, i.e., they are more 'slippery' than mineral oils of the same viscosity, and though the oil trade has known how to make good 'slippery' mixtures, no one at present knows what 'oiliness' is, and this is at the present time an important physical quest of the engineer."

Again Professor J. S. Brame has said that[1] "the property of 'oiliness' was one of the most puzzling of the properties of oils. By some it was regarded as unnecessary to connect it with viscosity directly, since it was possessed in a much greater degree by some fixed oils than by many mineral oils which had practically the same viscosity."

It is necessary to distinguish clearly between two distinct classes of lubricating practice. On the one hand we have the lubrication of fast-moving shafts, etc. supplied with a large excess of oil frequently under pressure, and in this case the frictional values are dependent primarily upon the viscosity of the oil; the mathematical and experimental investigation of these cases have been amply treated by Reynolds, Tower, Lasche, and others. On the other hand we have to deal with slow speeds at high bearing-pressures, frequently with a very limited supply of oil, and it is in these cases that the special property of "oiliness" or "body" is requisite to maintain the film, and it is here that viscosity measurements no longer assist us in the choice of the lubricant.

This view received unanimous support at the recent discussion on lubrication at the Physical Society.

Physical Properties of Liquids That Influence Their Lubricant Character.

What are the possible physical properties of a liquid which influence its character as a lubricant? They are viscosity, density, capillarity or surface tension, compressibility, and tensile strength. It is true that very little work has been done on compressibility and tensile strength, but from the observations of Worthington and others it would appear doubtful whether they would play a "distinguishing" role in the differentiation of oils; and ,further, as we shall point out, there is what appears to us an adequate explanation of the nature of oiliness without calling upon these properties.

So far as density is concerned there exists a wide range of petroleum mineral oils possessing specific gravities identical with those of the fatty or fixed oils, hence it is clear that density plays no determining part. Viscosity is, of course, of great significance in the cases of high speed, etc. just referred to.

Now it remained for Ubbelohde to point out that only a liquid which "wets" or "spreads over" the solid can constitute a true lubricant, because in order for the liquid to force itself into the narrower spaces of higher pressure it is essential on capillary grounds that the said liquid shall "wet" the solid surfaces.

Consider the case of two eccentric glass surfaces which are being forced together with a drop of mercury or oil between them. Now since the mercury does not "wet" or spread over the glass, the meniscus in this case will be convex to the liquid, while in the case of the oil which wets the surfaces, the meniscus will be concave. In the case of mercury the tendency on capillary grounds will be for the liquid to gather itself up into a drop and to pull the liquid film in the direction away from the narrower constricted area of greater pressure. In the case of oil the opposite will be the case.

This is exactly what is required in a lubricant, namely, that it shall penetrate into the narrow spaces between journal and bearing, and from the above considerations one clearly sees that liquids which do *not* "wet" solid surfaces cannot be described as lubricants.

Only those liquids which "wet" a solid surface possess lubricating power in the generally accepted sense.

Although these considerations appeared to indicate the connection between lubrication and capillarity, it will be seen that they only go so far as to enable us to say that mercury is not a lubricant and that oil is a lubricant. This is a conclusion of considerable theoretical interest, but it is not very helpful to the oil technologist who desires to differentiate between different classes of oils.

Accordingly we find that these speculations of Ubbelohde led to no practical result.

On the other hand, certain theoretical considerations had led to the conclusion that the permanence of liquid films depended upon capillary relationships, and in particular that *pure liquids would not show stable films.* These principles had not been applied, however, to the problem of lubrication, and, in fact, they were directly contradicted by prevailing practice in which there was a constant tendency towards greater purity, i.e., in the direction of refining the mineral oils which were used, and in the direction of using acid-free oil as a compounding ingredient.

---

[*] Abstracted from journal Society of Chemical Industry, March 15, 1920, 51T-60T and reprinted from Canadian Chemistry and Metallurgy.

[1] J. Inst. Pet. Tech., 1918, 4, 219.

The generally accepted view was therefore that capillarity was not a deciding factor in connection with the phenomenon of "oiliness," and various standard works contain statements to this effect.

It was under these conditions that we began our experiments. We were at once met by the fact that it was not possible to measure the surface tension between oil and the solid metal bearing, and it is probably on this account that Ubbelohde's speculations remained abortive. The usual "surface tension" is that of oil against air, and we confirmed the results of previous investigators, viz., that the results so obtained, for instance, by observing the rise in a capillary tube, shed no light at all on the question under consideration.

At this point we decided to measure the surface tension of the oil against an immiscible liquid in the hope that this might furnish some criterion of "oiliness." On proceeding to measure this interfacial tension, i.e., the surface tension between oil and water, startling results were at once obtained. The method of experiment was by the drop pipette as follows:—The pipette consists of a U-shaped capillary tube provided with a bulb and a ground glass orifice. The bulb is filled with oil to the mark. By means of the capillary a very slow flow of oil may be obtained by opening the stop-cock. The orifice is immersed in a beaker of water, and the number of drops formed by a given volume of oil is counted. The surface tension oil-water is inversely proportional to the number of drops.[2]

A series of mineral oils were tested with this instrument, and then a series of animal and vegetable oils and compounded oils.

Th following table shows a few results selected from a very large number of trials:—

Table of Interfacial Tension by Drop Numbers of Various Oils Against Water.

Mean Temperature 70° F.

OIL	No. of Drops at constant orifice and head.	Tension in arbitrary units.	
Paraffinum liquidum	95	100	Mineral oils.
0.905 mineral	101	94	
Solar red mineral	102	95	
Non-viscous neutral	99	93	
Olive	132	72	Fatty oils.
Rape	138	68	
Coconut	161	59	
Lard oil	128	73	

A glance at the table shows the surprising fact that **the inter-facial tension against water of the vegetable and animal oils is much lower than in the case of a mineral oil.**

What is more, we were struck by the fact that we had here a test which showed a distinct physical difference between mineral and saponifiable oils independent of viscosity, density, etc., and this difference appeared to be in conformity with the lubricating properties of the oils.

It now remained to enquire what was the reason for the difference in tension. After considerable experimentation we proved that the lowering of the interfacial tension against water in the case of fatty oils was due to their slight content of free fatty acidity.

The following table shows some of the results:—

OIL.	Free fatty acids, calc. as oleic.	Drop no.	Interfacial tension.
0.905 mineral	nil	101	100
98% mineral 2% com. fatty acids	1.9	125	80
97% mineral 3% com. fatty acids	2.8	130	78
Olive	2.2	125	80
Olive	4.5	140	72
Rape	2.5	132	76
Coconut	4.1	148	68
Olive (neutral)	0.1	110	92
Rape (neutral)	0.15	108	93

By removing the free fatty acids from the saponifiable oils the tension rises, and by adding free fatty acids to the mineral oil the tension can be lowered.

Now, all commercial animal and vegetable oils contain small quantities of free fatty acids, and even if the utmost care has been taken in refining to remove the acidity, hydrolysis soon sets in and free acids are formed which, in even relatively minute quantity, suffice to lower the surface tension.

The following table shows the percentage of free fatty acids in representative samples of animal, vegetable, and compounded oils on the market:—

	Acidity (as oleic)
Animal oil, pale	4.2 to 25.55
Animal oil, brown	12.02 to 30.32
Castor, first	0.49 to 1.70
Castor, seconds	2.2 to 7.40
Coconut, Cochin	1.26 to 19.11
Colza, Belgian	1.97 to 3.22
Colza, Stettin	1.41 to 4.48
Lard, pressed	0.28 to 0.71
Olive oil, Algerian	2.52 to 13.72
Olive oil, Gallipoli	12 to 33.14
Palm oil	24.68 to 56.05
Palm oil bleached	14.1 to 27.49
Rape oil, Black Sea, refined	1.82 to 4.34
Rape oil, East India	1.26 to 4.24
Sperm oil, Arctic no. 1	0.56
Sperm oil, Arctic no. 2	0.42 to 4.34
Sperm oil, Southern	0.7 to 2.86
Tallow	1.55 to 43.71

Standard Brands of Compound Oils on the Market:

	Acidity (as oleic).
Marine engine oil, D	1.3%
Marine engine oil, O	5.15%
Marine engine oil, T	4.5%
Motor oil, X	0.26%
Motor oil, Y	0.5%
Motor oil, Z	2.5%
Compound steam cylinder	0.4%
Medium gas and oil engine oil	0.25%
Medium gas and oil engine oil	0.39%
Light gas and oil engine oil	1.6%
Light gas and oil engine oil	1.3%
Heavy gas engine oil	1.28%
Heavy gas engine oil	2.5%
Oil engine oil	0.7%

The above table is representative of the general glycerines and commercial compounded lubricating oils in daily use on all types of power plant, and we see that fatty acids are always present to a certain extent. From the foregoing it is demonstrable that:—

1. Capillary effects (hitherto ignored in lubrication) play a fundamental part.

---

[2] Donnan, Zeit., f. Physik. Chem. vol. 31, etc.

2. The presence of fatty acids in an oil lowers the surface tension of said oil against water.

3. A neutral glyceride possesses a similar tension to a neutral mineral oil.

4. The addition of a relatively minute amount of a fatty acid to a neutral mineral oil reduces the tension to that of a commercial animal or vegetable oil or compounded lubricating oil.

Lubrication of Solid Surfaces.

Now it remains to enquire how far these results influence the theory and practice of lubrication of solid surfaces. It might be argued that the interface between oil and water is a different thing from the interface between oil and metal, and that the conclusions drawn from the one case are not necessarily applicable to the other. As a matter of fact such similarity in effect is not unknown in other instances, and to obtain more conclusive evidence Professor Lewis has measured the interfacial tension between oil and a liquid metal—mercury. (It should not be forgotten that solid-liquid interfacial tension cannot be measured.) His results are as follows:—Pure mineral oil, 100; same mineral oil plus 2% of commercial fatty acid, 89. It is seen that again there is a lowering in the interfacial tension as a result of the addition of the organic acids, and, what is more striking, the relative lowering produced is very much the same as it is in the case of an oil-water interface.

Professor Lewis remarks: "One may conclude therefore with some confidence that the addition of the organic acids will lower the tension at any metal-oil interface."

Again, as already pointed out, the permanency of films is dependent upon a diminished interfacial tension between the oil and the metal in contact therewith. If such a film is broken the possibility of its uniting again to form an unbroken layer depends entirely upon the interfacial tension being low. Any substance which lowers the interfacial tension causes the liquid to spread over a larger area of the solid. It follows therefore that if a substance be added to an oil which brings about a lowering of interfacial tension, such addition will act favourably as far as lubrication is concerned by preventing in turn the metals coming into direct contact.

The capacity for spreading may be considered as partly physical and partly chemical, due presumably to residual valency. The effect is to render the transition layer between the liquid and solid less abrupt. This diminution in abruptness can be brought about by chemical action direct or indirect across the transition layer or by the solubility of some third substance in both phases.

H. S. Allen has recently pointed out that on Langmuir's view oiliness depends on the chemical forces called into play between the active part of the oil molecule and the solid surfaces of the bearing.

Now it is obvious that there is a tendency for chemical activity between the metallic surfaces of bearing and journal and an oil containing free fatty acidity, while such tendencies are less pronounced in the case of a neutral mineral oil. Such a tendency would render the transition between oil and solid surfaces less abrupt, would manifest itself by reduced interfacial tension and would result in better spreading and consequent increased efficiency in lubrication.

There is little doubt in our minds that the physical rationale of the property of "oiliness" is now explained, and we have confined ourselves so far to a statement of the physico-chemical experiments which we have made and to the development of the physical theory.

Conclusive as it appears to us we have proceeded to test and verify the conclusions by direct friction measurements, and finally by the only real touchstone, namely, the test of experience in a long series of practical trials on all types of machinery and prime movers of the very largest sizes.

Results Obtained From Friction Measurements And From Trials On All Types Of Machinery.

Results, which show that 1% of free fatty acids of rape oil added to mineral oil are as effective in reducing the value of the frictional co-efficient as is the addition to the mineral oil of 60% of the neutral rape, are striking confirmation of the above described principles, and coming from a totally independent and unbiassed experimenter afford great support to our contention that it is not the glyceride but free fatty acids in a compounded oil which improves its lubricating value.

Through the courtesy of one of the largest engineering firms in the country we have been enabled to make a series of measurements in a large friction testing machine, the results of which we here reproduce:—The test journal of the machine—which is of the Thurston type—is 3.8 in. diameter, giving approximately one foot peripheral speed per revolution. The length is 6½ in., and in all our experiments the load was 200 lb. per sq. in. The machine is provided with a revolution counter and a drum upon which the reading of the arc is automatically traced. The driving motor was operated by a variable speed controller, and all care was taken to ensure steady and constant speeds. The journal and bearing were thoroughly cleaned befor each test by washing with toluol, and finally rotated against velvet pads to remove all superficial dust and moisture. The experimental temperatures was kept between 60° and 64° F.

The values of the frictional coefficients calculated from the curves obtained directly from the machine are given in the following table.

By way of illustrating our point, four oils were chosen of identical viscosity and density but differing in composition thus:—

These results afford great support to the views expressed above, and, coupled with our experience in practical lubrication, about to be mentioned, confirm our explanation of the property of oiliness and open out a new and invaluable field in the manufacture of lubricating oil.

We should here mention that this principle of making lubricating oils by adding to mineral oils small quantities of fatty acids or substances which lower the interfacial tension has been accepted by the Patent Offices in all countries.

We should add a word here with regard to the possibilities of corrosion.

As will be observed from the table, all compounded oils which have been and are in daily use for years [illegible] rarely hears of any active corrosion.

In our case we add only very minute amounts of fatty acids, and the quantity is strictly limited and controllable. But where fatty glycerides are employed the amount of acidity which can form is potentially very large because hydrolysis is constantly going on, giving rise to the production of free acids.

	Viscosity at 60 F. Second Redwood.	Sp. gr. at 60° F.	Total acidity calc. as oleic acid.	Mean temperature of expts.	Peripheral speed in feet per minute.	Quantity of oil used for test.	Arc.	Coefficient of friction.
A. Pure mineral	973	0.909	nil	62	11	5 c. c.	40	0.0084
B. 97% Pure mineral . . 1% Pale cylinder* . 2% Com. fatty acids	973	0.909	1.9%	62	11	5 c. c.	25	0.0052
C. 80% Mineral . . . . . 20% Olive.	980	0.908	0.3%	63	11	5 c. c.	40	0.0084
D. 40% Mineral . . . . 60% Olive	970	0.907	0.9%	64	11	5 c. c.	35	0.0073

* Added to keep the viscosity constant.

During recent years a great deal of attention has been devoted to the study of the colloidal characters of the fatty acids, and it has been shown that while the lower members of the fatty acid group possess relatively little colloidal character, the higher members are highly colloidal in character. Donnan and Potts have shown that there is a gradation in these properties as one ascends the scale, lauric acid occupying a sort of intermediate position. Also the lower members of the series possess strong acid characteristics, while the higher members are very weakly acid. Now the fatty acids which occur in commercial oils are never pure chemical individuals, but are mixtures in varying proportions of a considerable number of fatty acids. Coconut oil, for example, is characterized by containing appreciable percentages of the lower members of the series, while rape oil rarely contains anything but the higher members.

It is only to be expected, therefore, that the behavior of these oils will differ in accordance with the fatty acid groups which predominate in them, and it is possible to reproduce the capillary properties of any particular animal or vegetable oil by adding suitably chosen fatty acids to mineral oil.

Consider the case of a steam engine using saturated steam, where there is a tendency for condensation of water to occur in the cylinder and valves. It follows in such a case that the presence of a substance in the oil which lowers the surface tension against water will in such circumstances assist in the formation of oil films by enabling the oil to spread more readily or by overcoming the tendency of the water to wash the oil film off.

There is a certain type of lubricant phenomena to be considered where the oil is brought into contact with water and it is desirable that the oil shall either separate itself rapidly from the water (de-emulsification) or, conversely, that it shall mix or emulsify with the water.

Now the phenomenon of emulsification is dependent upon the colloidal properties of the oil, while de-emulsification is brought about by a greater concentration of hydrogen ions. Consequently one would expect the oil containing the higher members of the fatty acid group to possess an emulsifying tendency, while one containing the lower members will possess a de-emulsifying tendency. This is a feature which we have tested by shaking oils and water at various temperatures for long periods of time, and to a great extent we have been able to substantiate this view as the result of experiments.

After the soundness of our theory was clearly demonstrated in the laboratory it remained for us to put it to the touch of actual practice to prove its real value in the world of engineering.

Not a single failure has occurred in practice of an oil or an oil "essence" made on the "germ process" as a reliable lubricating oil when used for the purpose for which it was supplied. The meaning of "oil essence" is explained later.

We use the expression "germ process" to describe the oil made by using one or more fatty or other acids with one or more mineral oils, because the world has been taught for generations to look upon acid as the deadliest enemy to good and safe lubrication. As the germ is the first principle of organic life, by analogy we call a suitable acid when dissolved in mineral oil the "germ", which gives to mineral oil its life and activity as a more perfect "instrument of lubrication."

We do not claim that a "germ process" oil is better for all conditions of lubrication, but for many purposes where lubrication depends upon the oil alone and not upon any mechanical means, such as pressure, to maintain a continuous film.

We have proved to our entire satisfaction that the addition of fatty oils to mineral oils for any purposes of lubrication is unnecessary, and a waste expense of valuable material, and that for such purposes oils combining small percentages of suitable free fatty acid or acids with suitable mineral oils are at least equal to oils compounded on the old formulæ for those purposes. Therefore many of the formulæ and specifications for compound oils are obsolete. When the expression "compounded oils" is used, it indicates such old formulæ oils. Also, "mineral oil" indicates in many cases one or more than one mineral lubricating oil. "Fatty oil" includes tallow and other "fats" used for lubrication.

Gas Engines.

It has always been considered that the addition of coconut oil to a mineral oil gave the best results. Refined rape oil or other fatty oil to the extent of about 5 per cent of each; that is about 10 per cent of fatty oil, 90 per cent mineral oil. Especially on large horizontal units such a compounded oil was deemed essential. For smaller units smaller proportions down to 5 per cent total fatty oil to 95 per cent mineral oil; though some small units apparently required heavily compounded oils.

So far as our business is concerned, "germ process" oils have entirely displaced such compounded oils for horizontal and vertical engines up to the largest units of both types.

Some gas engines run on "straight" mineral oil with good results, but roughly it can be claimed that ten units run on "germ process" oil to one on straight mineral.

Oil Engines.

Compounded oils, and for some types "straight" fatty oils such as oilive oil, have been considered essential for oil engines. For several types it was thought necessary to use a compound of *one-third rape oil* to two-thirds mineral oil. That oil has been entirely superseded by an oil with a slightly higher percentage of fatty acid than the average "germ process" oil for oil engines, but not over the maximum considered safe in practice. For other oil engines, land and marine, their place has been taken by oils made from one or more fatty acids with mineral oils of suitable quality.

The quality of the mineral oil with which the acid is blended is a very important factor in lubrication. The germ process gives to a mineral oil of fair merit that property lacking for some purposes; while it increases the lubricating value of a "good" oil, making it still better for many purposes. In both cases they become more economical.

Stream Cylinder Lubrication.

It is almost universally considered that for "perfect" lubrication of steam cylinders with certain types of valve gear (as one example, "Corliss"), and for engines working under certain conditions— say with much condensation in the cylinder — a compounded oil is essential.

"Germ process" oil incorporated in very small proportion with the correct mineral cylinder oil gives equally good results on engines with Corliss valves up over 3,000 h.-p. working at 160-170 lb. per square inch pressure, superheated 480-500 degrees F.; on horizontal engines with Corliss valves up to 750 h.-p. up to 160 lb. pressure without superheat. Various mineral cylinder oil bases to correct "germs" in different but small proportions give thoroughly good lubrication on vertical and horizontal engines of many types, sizes, and pressures.

Oils For Steam Turbines, Crank Cases Of Vertical Steam Gas, and Oil Engines.

The property most essential in oil for steam turbines, namely non-emulsification, is the one which largely governs successful crank-case lubrication in vertical engines. In such cases and in turbines water from condensed steam or from the cooling system falls into the crank case and gets "churned" as it is pumped round with the lubricating oil. For these conditions one has to know something about impurities in the water, as the water is the deciding factor. The "germ" must be carefully adapted to the water as well as to the oil, and the oil to the mechanism. Where one oil is used for cylinder and crank-case lubrication (say, of gas and oil engines) the "germs" can be balanced to give what for convenience can be described in a general way as a positive effect in the cylinder where extra capillarity is required, and a negative effect in the crank case where emulsifying is undesirable, and where the engine is steam, of the splash lubrication type, to give just enough emulsion and no more for its intended work in the cylinder, also in the crank case, where it must emulsify. The germs, for there are many, can be so adapted when one thoroughly apprehends their properties, to give perfect lubrication in all such cases.

Marine Steam Engine Bearings—Open Type.

For a good heavy marine engine oil it has always been considered necessary and is so to-day, to use from 10 to 25 per cent thickened or blown oil — as a rule, thickened rape oil. This gives great viscosity, also very good "lathering" properties to the oil.

The standard specification for marine bearing oil for one of our semi-Government departments is a compound of about 20 per cent "of fatty oil", but the total fatty acid content must not exceed 1 per cent. This has now been successfully replaced by "germ-process" marine-engine oil.

On February 5, 1918[3], we filed our patent for oils made on this new process, and immediately its "publication or communication" was prohibited by the Admiralty, who carried out trials over many months on about fifteen ships of the mercantile marine, including a fair proportion of liners. The result was quite satisfactory.

At this stage we decided to supply the fatty acids in a form, which we term "essence", mixed with mineral oil and which can be conveniently used on board ship; about 2½ per cent is added to the mineral oil as required. The result justified all claims. The consumption of mineral oil was considerably reduced, hot bearings were cooled, and thrust blocks were kept cool by the addition to mineral oil of suitable "germs". The trials were a complete success.

We think it desirable to say that it may not be advisable for oil users in general to buy fatty acids, to mix them in their oil and imagine all advantages mentioned will accrue. Suitable acids must be chosen for the purpose.

Conclusions.

We have shown (1) that fatty compounded oils are unnecessary for many purposes of lubrication; (2) that fatty oils are not essential for such work; (3) that fatty acids can entirely and completely displace fatty oils for those purposes.

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[3] Eng. Pat. 130,677; see J. S. C. I., 1919, 674A.

GUMMED TAPE MAKERS JOIN PERFECT PACKAGE CAMPAIGN.

Chicago, Ill., Nov. 2.—Perfect packages packed in paper formed one of the topics of the gummed paper manufacturers of the United States this morning when the Gummed Paper Manufacturers Association announced that it would participate in November's observance of perfect package month as planned by the American Railway Association and the American Railway Express.

A unique example of the use of gummed paper was brought out in the report that gummed paper tape is now being used to seal cases of clothing and cloth fabrics to protect the contents from injury by dirt or moisture through the cracks of the cases. Many such cases are made of very thin wood, some of three-ply plywood, and the gummed tape is being extensively used in the east to hermetically seal such packages.

Government experiments on fruit and perishable vegetable shipments in packages sealed with gummed tape were also reported to be under way, but the testing experts have not as yet been able to determine proper specifications for fruit shipping cases made of corrugated fibre or other paper boards.

A study of gummed tape, as compared with twine for wrapping shoes made by a big national company was reported at the convention of the association, showing that the saving made by the use of tape instead of twine on half a million pairs of shoes was $1,556.

Often it is not the greatness of thy trouble, but the smallness of thy spirit that maketh thee to complain.—Seneca.

Chemical Investigation of Cellulose

Suggestions by Mr. Arthur Baker, Chairman of the Technical Section of the British Paper Makers' Association, at the Edinburgh Meeting.

As papermakers, we should remember that cellulose is a typical colloid, and that the majority of chemical reactions which take place in living matter occur catalytically in colloidal media. Fundamental investigation or research is vital for industry to-day, and as Dr. Macdonald truly remarks, it is significant that the discoveries made in the pursuit of knowledge for its own sake have so far had the most far-reaching effects. That is very good reason why technologists and those employed in the technical application of science to industry should keep one eye fixed on the rapidly-growing-knowledge of the mechanism and process of nature, which can only be acquired by the patient work of the physicist, chemist, and mathematician in their laboratories and studies.

Dr. Macdonald asks is there a field for fundamental research in the paper industry. I answer that the value of experimental methods may be accepted as beyond all question, but that the time has not yet come when empirical methods can be dispensed with in paper manufacture and many other industries, because owing to the lack of fundamental research in the past we are not sufficiently informed about the materials we are using in everyday practice. Cellulose, the basis of our industry, is a comparatively unknown substance. Notwithstanding what I have said, it is very largely due to chemical investigation that the paper industry has reached the enormous dimensions of today. It is doubtful whether and modern chemical discovery has such a rapid success of pronounced industrial value as the chemical production of wood pulp rendered possible by the work of Tilghmann, Pictet, Ekman, Mitscherlich —period 1875-1880.

It is true the formation of the web of paper has attracted a great deal of attention, probably because news-print must be made at a high speed as a commercial proposition, but ask an intelligent beaterman in a fine mill what he has to say about the formation of the sheet, and you may be surprised at his answer. The fact is that the hydration of paper stock is a great problem in the paper mill, and all the factors which enter into play await elucidation.

Mr. Gemmell thinks it is now time we focus attention on some particular line of work. I suggest this problem of hydration is the problem upon which we can most usefully focus the mind of the research worker, and if the necessary work is carried out I venture to predict that the next big advance in the technology of the beating process by the application of chemical methods.

Dr. Macdonald has pointed out the subject is receiving attention on the Continent and in the United States. The question has been touched upon by a few British workers, although little has been published.

It has always been a subject I have been personally interested in, and it was arising out of enquiries in this direction that I was led to critically examine the ultimate structure of esparto and other fibres, although I soon came to the conclusion that help from the microscopo was very limited and that the subject should be examined from the chemical side. Three facts always pointed in that direction.

I. Manilla becomes rapidly hydrated to a high degree when used in the ordinary way, but when highly purified does not hydrate so readily.
II. Imitation parchments are usually made from sulphite boiled by the Mitscherlich process as distinct from the Ritter Kellner. As you are aware, the latter produces a purer but freer pulp.
III. Under-boiled pulps, such as Kraft pulp, readily hydrate.

In other words, cellulose pulp from different sources contain certain residues of lignone compounds or other cellulose derivatives all more readily hydrate than cellulose pulp of a high degree of purity. Certain residues appear to render the pulp more reactive to water during the beating process.

Like Dr. Macdonald, I have followed Schwalbe's researches with keen interest. He concludes definitely that hydro and oxycellulose are chiefly concerned in process of hydration and states that Mitscherlich pulp treated with two per cent. of its weight of sodium nitrite in solution, acidified and allowed to stand before beating, hydrates very rapidly when beating is commenced. If these investigations are confirmed and you may be sure they will be tested, they will have a profound effect upon present beating practice—and may become a classic example of the value of Fundamental Research.

Another interesting fact which has emerged from recent investigations is that all fibre substances take up a higher proportion of hygroscopic moisture from a saturated atmosphere the greater the degree of hydration. In the case of Imitation Parchment the increase is as much as 12 per cent. It is suggested this fact might form the basis of method of measuring the hydration of the finished sheet of paper.

There is a comparatively untouched field for research in hydration problems. What we term ligno cellulose, pecto cellulose, muco cellulose, etc., comprise a range of cellulose derivatives existing in the vegetable world in the form of highly reactive collodial systems of a carbohydrate nature. Their true relationship to pure cellulose, a most inert substance, is unknown These bodies and the chemical differentiation of the substance composing the cell walls and their contents are practically an unexplored field—the ground has merely been scratched.

As papermakers we are vitally interested in these problems. The prospect of being able to hydrate the fibre almost unreduced in length and even to profoundly modify mechanical pulp itself, is surely one which will appear to every papermaker.

AN OUTING FOR CANADA'S LUMBER KING.

One of the most interesting visitors that we have had in town for years was J. R. Booth, of Ottawa, the oldest and best-known lumber and paper manufacturer in Canada. Mr. Booth is now in his 95th year, is hale and hearty, and takes as keen an interest in business affairs as he ever did. He came to Buckingham by motor, spending the afternoon, and returning the same way. He said it was the first time he had visited Buckingham, although he had been trying to get here for the last twenty years, but the boys at home did not seem able to let him a day off. Mr. Booth, even with his advanced age, carefully inspected the whole of The James Maclaren Company's plant, and showed a keen interest in everything that was being done, commenting favorably on the many labor-saving devices.—Buckingham (Que.) Post.

Vulcanized Fibre and Its Uses

By A. R. R. JONES.

On Carlaw Avenue, Toronto, is situated the plant of the Diamond State Fibre Company of Canada, Ltd. This is a daughter company of the Diamond State Fibre Company, which is the largest manufacturer of vulcanized fibre and vulcanized fibre products, and carries the world's largest stock of both. The products of this big concern, which has mills and factories at Bridgeport, Pa.; West Conshohocken, Pa.; Elsmere, Del.; Boston, Mass.; Maidstone, England, London, England; are manufactured in Canada at the Toronto plant on Carlaw Avenue. The officers of the Canadian Company are as follows: Mr. J. M. Taylor, president; Mr. W. H. Taylor, vice-president; Mr. T. E. Webster, director of sales and general manager; and Mr. L. T. McCloskey, secretary and treasurer.

The writer was taken over the Toronto plant by Mr. Webster, the general manager, and exceedingly interesting he found it. One need be no prophet to see clearly that the Company is bound to develop rapidly, and that the growing use of the products it manufactures is going to constitute a far from unimportant chapter in the history of Canada industry. For the constantly changing conditions of modern industry are demanding materials of unusual properties. It is the distinction of the vulcanized fibre known as Diamond Fibre that it can satisfactorily meet a large number of these diverse and severe requirements. Indeed, to one like the writer who has been given the opportunity of seeing something of the wide range it is capable of covering in manufacturing utility, its applicability in the industrial field seems almost unlimited. In common use today there are literally thousands of commodities which are made wholly, or in part, of this substance. In the electrical, mechanical and transportation fields alone, Diamond Fibre is already playing a highly important part. The part that it is destined to play in almost every sphere of industrial activity will be more important still. For manufacturers everywhere are recognizing its value, and are utilizing its highly remarkable properties, as to which a word or two will be said presently, in a great variety of products.

What Diamond Fibre Is.

Diamond Fibre is made from cotton cellulose, chemically hydrated, and a selected stock of cotton rags forms its base. Certain combinations of rags are selected, in order to make the different kinds of fibre. They are sent through large dusters, and then to the sorting-room where they are re-sorted. They are then, when sorted, put through heavy rotary cutters, which cut them into fine pieces. These pieces are cooked in large rotary boilers, cleaned by washers, and broken up into pulp by "beaters." During these processes, every care is taken to remove all foreign substances from the stock, which is then passed through continuous paper-making machines, where it is formed into flat, wet sheets and then dried. These sheets are wrapped into rolls, unwound by the fibre-making machines and run through an acid bath. The chemical process turns the sheets of cotton cellulose into sheets of Diamond Fibre, which material has a dense, tough, homogeneous texture. The sheets of fibre are then cut off the fibre machines and the acid with which it is still saturated is removed by a lengthy process which sometimes takes over a year to complete. The Diamond Fibre sheets are then dried, pressed flat, rolled and put into stock for seasoning.

The Material's Unique Properties.

As a new raw material Diamond Fibre has properties that make it superior for many purposes to steel, brass iron, tin, wood, hard rubber, leather and many scarce and costly materials. It should not be confused with wood pulp "fibres", which are generally used for such purposes as wall coverings, shipping cases, etc. Diamond Fibre is basically an entirely different and unique material. It is a superior grade of vulcanized fibre. It is tougher than horn, almost as hard as iron, yet lighter than aluminum. Its unusual toughness is especially noteworthy. No ordinary force can cause it to dent, crack, split, break, or splinter. It actually improves with age. It is impervious to oil and grease, is unaffected by all ordinary organic solvents, and will not crystallize under severe vibration.

Its tensile strength is 12,000 to 15,000 pounds per square inch; its resistance to compression about 40,000 pounds per square inch; its shearing strength about 10,000 pounds per square inch; and its dielectric strength 200 to 400 volts per mil of thickness. No other material, it is claimed, can favorably compare with Diamond Fibre in the relation of its weight to its tensile strength. The fact that it is used as a dielectric by the world's largest motor manufacturers is evidence of its reliability in insulation. It is non-corrosive. Diamond Fibre does not deteriorate if subjected to moisture or submerged in water. It expands somewhat, but after drying it recovers its approximate normal dimensions and weight.

Diamond Fibre contains no grit, dirt, or foreign substance such as would obstruct any machinery process, or injure its insulating property. It may be sawed, bored, drilled, turned, topped, threaded, milled, punched, or worked into various shapes, but it cannot be molded. It takes a high, smooth, glossy finish. It is made in three colors—grey, which is its natural color, jet black and deep red.

Forms and Grades of Fibre.

Diamond Fibre as a basic material is produced in three primal forms—sheets, rods, and tubes. These forms are fabricated or machined into the numerous and various special parts for which Diamond Fibre is especially applicable.

An important feature of Diamond Fibre is the different grades in, which it is produced to meet various requirements. The particular grade required can be obtained only by applying the right chemical treatments to the right quality of cotton cellulose. For example, the trunk manufacturer requires a grade of fibre different from the grade suitable for making gears.

Diamond Fibre is made both hard and flexible, with variations of each grade to meet required specifications. The Hard Fibre, which is used primarily for mechanical and electrical purposes, is the toughest and strongest grade of vulcanized fibre that can be made. Several different grades of Hard Fibre are made, and each grade possesses qualities that make it particularly suitable for the special use to which it is designed to be put. For example, there is one special grade to take stamping and light punch press work. Another is suitable for making difficult shapes such as require very fine machining, and rods made from this grade are used extensively for the making of small parts in automatic machinery. Diamond Flexible Fibre is a soft and pliable material, the degree of flexibility of which can be varied to meet special requirements. It is used extensively for the making of small parts in automatic machinery, Diamond Flexible Fibre is a soft and pliable material, the degree of flexibility of which can be varied to meet special requirements. It is used extensively for packing, such as washers, gaskets, etc.

Uses of Machined Parts.

The user for Diamond Fibre sheets, rods and tubes in the manufacture of special machined parts are exceedingly numerous at present, and new uses are being developed daily. The Company at its Toronto plant, operates departments for machining special parts from Diamond Fibre in its basic forms of sheets, rods and tubes. Gears, fuse casings, track insulation, flanged and threaded bushings, washers, timer rings and so forth, are machined according to required specifications. Moreover, the Company's experts in its specialty departments are continually designing parts required by customers. Manufacturing firms find the knowledge and experience of the Company's experts and its comprehensive technical facilities invaluable in the solution of their special production problems present, and, in particular, in the matter of advice as to how either a saving in production or an improvement in product, or both can be effected.

Machined Parts for Textile Mills.

Diamond Fibre is specially suited for making textile specialties because it is entirely free from splinters; it has a smooth, glossy surface that improves with use; its color is in-built, and, therefore, does not run and injure fabrics; its light weight and strength cut down the bulk of the special part. It is now in general use in silk, woollen, cotton, artificial silk, hemp, and jute mills for a great variety of purposes, such as spool heads, bobbin heads, bobbin boxes, loom picks, shuttles, swift braces, shuttle box liners, thrust washers, lacing combs, gears, picker stick ends, spindle guards, etc. Besides the various specialties used in textile mills. Diamond Fibre is extensively used in the manufacture of receptacles of all kinds for the textile industries. Among these receptacles may be mentioned the Diamond Fibre truck, which is extremely suitable for use in textile and other mills, as it constitutes a superior transportation system for the quick and convenient handling of raw and finished material; the Diamond Fibre barrel, which is strong and durable, as well as light and easy to handle; the Diamond Fibre basket, very valuable as an accessory in textile mills for catching and holding manufactured articles as they leave the machines; the Diamond Fibre roving can, either seamless or riveted, and frequently used, as a container for waste, in place of the larger barrel; the Diamond Fibre delivery case; and the Diamond Fibre waste basket.

Electrical and Automative Uses.

In the electrical field, Diamond Fibre finds one of its most notable spheres of application, not only because of its superior insulating qualities, but also because of the great ease with which it can be machined into the many intricate shapes required by the electrical industries. It has an electrical resistance of 200 to 400 volts per mil of thickness. Among the many electrical uses in which it has proved valuable are cleats, switch handles, slot wedges, bushings, knobs, fuse casings, insulation for armatures, track insulation for block signal systems and railway equipment, lighting arresters, wire conduits, etc.

Diamond Fibre has an extensive use in the automotive field for numerous special parts. It is particularly suited for this industry on account of its imperviousness to oil and grease; its high dielectric strength; the ease with which it takes extreme machining; and its great strength combined with light weight. It is chiefly used for special parts in ignition, lighting, and starting systems for manifold tubes, wire cleats, switch handles, bushings, terminal blocks, gears, timer rings, fuse plugs, etc. It is used to make gaskets for radiator cups. Other uses are for clutch linings, brake bands, friction discs, radiator gaskets, handles of various kinds, etc.

Discs and Washers and Handles.

Diamond Fibre Discs and Washers are another important branch of the special parts in the manufacture of which Diamond Fibre is used. These are furnished in thicknesses from .005'' to 2'', and in every diameter up to 48''. They are furnished with rough-punched, smooth-shaved, band-sawed or lathe-turned edges, as required. Diamond Fibre Discs and Washers have a wide range of utility; for example, the bibb washer for spigots, and the thrust or bearing washer on heavy machinery. They are in general use from the small washer used in the manufacture of a delicate piano action to the heavy washer used to produce a gear or pinion.

Handles, of all sizes and shapes, are made of Diamond Fibre in lieu of rubber, ebony and composition. They are tough, strong, light and unbreakable, and, as Diamond Fibre is a non-conductor of heat and electricity, the user is protection against shocks and heated parts. Crank handles, switch handles, control handles, percolator handles, knife handles, gauge cock handles, brush handles and handles for electrical and mechanical equipment of all kinds, are some of the handles which are made of Diamond Fibre.

Wheels and Casters and Gears.

Diamond Fibre wheels are in great demand because they do not injure hardwood, concrete or mosaic floors, and because they eliminate much of the noise incidental to most transportation systems. They give good service and are extremely durable. They are also much used as pinions in direct motor drives, as they eliminate much of the lost motion due to belt slipping. Casters of Diamond Fibre are used for cabinets and other articles of furniture. They are practically indestructible and do not need lubrication.

Numerous tests, under all sorts of conditions, have proved that, in addition to its many other uses, Diamond Fibre is well adapted for making gears of all kinds, from the small sizes used in vacuum cleaners, paper folders, silk and knitting machinery, to the heavy service pinions used on machine and motor drives. However, in order to get the best results, it has been found necessary to make a special grade of Diamond Fibre. This special grade is a dense fibre of relatively high specific gravity. Its dense texture, high tensile strength, unusual wearing qualities, low cost, together with its slight elasticity, make it a very satisfactory gear material. An important feature is that these Diamond Fibre gears are niseless.

Condensite Celeron and Oil Celeron.

It is impossible, owing to space consideration to treat of all the products of the Company. But mention should not be omitted of the two waterproof fibres that it is producing, known as Condensite Celeron and Oil Celeron. The former possesses the dielectric properties of the well-known condensite moulded products, combined with the general properties of Diamond Fibre. Unlike moulded products, Condensite Celeron can be readily machined. The many uses to which it can be adapted are, therefore, quite obvious. This material is hard, tough, homogeneous and relatively non-hydroscopic. An average test piece will absorb less than 0.8 per cent water on a 24-hour immersion.

It is insoluble in all of the ordinary organic solvents. Its dielectric strength averages between 700 and 1,000 volts per mil of thickness. It will withstand a temperature of 300 degrees Fahrenheit without deterioration. Oil Celeron is simply Diamond Fibre chemically impregnanted with oils of various qualities instead of Condensite, which impregnation gives the material a certain flexibility and makes the fibre water-proof.

Should Paper Makers Take All the Loss?

(Contributed.)

In discussing the reasonableness or otherwise of the present price of newsprint (other than that dependent for its cheapness on debased European exchange) Mr. E. P. Adler, chairman of the A.N.P.A. Paper Committee, in Buletin No. 4487, intimates that the paper manufacturers should themselves be willing to suffer whatever loss may be involved in writing off their inventories in order to conform to the current cost of raw materials and to bring newsprint down to the price at which, in Mr. Adler's opinion it ought to be sold.

"It is true that some mills have on hand a large supply of high-priced wood and under contract some high-priced coal," he says. It seems to him, he adds, that they must take their losses on those high-priced materials the same as other business institutions have had to do," in order to get back to normal."

Conceivably there might be some reason in Mr. Adler's contention if the newsprint manufacturers, or the great majority of them, had been permitted to conduct their business in their own way throughout the period of abnormal prices the same as the manufacturers of other commodities. Unhappily such was not the case. For the greater part of this period the price of newsprint in the United States and in Canada was under control—in the former country through the Federal Trade Commission and in the latter through the Government Paper Controller. In both countries price-fixing was prefaced by prolonged proceedings. In both, the principal bone of contention was as to whether manufacturing costs and rate of return should be predicted upon the current cost of investments and of raw materials or upon their actual cost at the time or purchase. It was in evidence that pulpwood had to be harvested from one to three years prior to its absorption in the manufacture of paper. It was shown that wood costs had advanced very materially since the wood under consideration had been gathered. The manufacturers contended for the right to take in their inventories at current market prices or replacement value. The newspaper publishers as strenuously opposed this view in favor of charging them in at their actual cost. The records are filled with page after page of evidence and arguments on this point.

The publishers introduced in both proceedings numerous "expert" witnesses in support of their views. "These witnesses," says Mr. Guthrie B. Plante (the American publishers' chief counsel) in summing up in his brief, "each and all, repudiated the basing of returns upon inflated values obtained through appraisals upon the basis of replacement costs in periods of war or other great financial disturbance."

Mr. W. N. Tilley, K.C., the Canadian publishers' lawyer, in his brief, summarizes the manufacturers' contention thus: "The main argument advanced in support of the replacement theory was that if effect were not given to it the manufacturers would be left with large stocks of high cost wood at a time when the selling price of paper might be falling," whereupon he proceeds to show the "absurdity," as he characterizes it, of any such claim.

The publishers' views prevailed. The manufacturers, who foresaw the time when their position would be reversed, were denied the right to protect themselves against it. They were not allowed to increase their selling price with the rise in the cost of their raw materials or to prepare for the inevitable fall in prices which they knew must follow. They find themselves with high-cost inventories on hand which the publishers now say should be liquidated at the manufacturers' sole expense. Naturally the manufacturers can't see it that way. The circumstances afford an additional illustration of the folly of interfering with the laws of trade. Had the publishers been willing to allow the paper manufacturers to adjust their selling price to the rising value of their raw materials, the manufacturers would now be in a position to adjust their selling price downward, to meet the publishers' demands. They didn't do it and no blame can now be attached to the manufacturers for seeking to incorporate the actual cost of their wood in the selling price of their paper as they were forced to do when it was to the consumers' interest.

It is also pertinent to point out that in assuming to advise newspaper publishers against entering into contracts for their next year's requirements of newsprint in the expectation of much lower prices the A.N.P.A. Paper Committee is taking on a grave responsibility, since it is quite possible that their advice may turn out just as disastrously for the publishers as did similar advice tendered by the A.N.P.A. Paper Committee in 1917-18. That committee, it will be recalled, began in August, 1917, to instruct the publishers not to contract for the following year's paper at the then prevailing prices, arguing that lower prices were inevitable. In November, 1917, the Committee then, as now, reported an excess of newsprint in sight for the next year with greatly increased production certain. In a bulletin issued November 22nd of that year they urged publishers to refrain from making contracts, and on December 13th. repeated the advice still more insistently and predicted that the "enormous surplus" then available "will operate to make a slump market in 1918." All through the early months of 1918 this advice was repeated and repeated until the early part of June when the Committee, suddenly reversing itself, issued a bulletin telling publishers to "buy paper heavily" and to maintain a six months' reserve supply whenever possible—advice that came too late to benefit those publishers who had heeded that given during the preceding six months' period.

Publishers would do well to read over their old files of A.N.P.A. "B" bulletins and to check up the predictions made therein with their own subsequent experience in buying paper. With no desire to cast discredit upon the judgment or good faith of the Paper Committee, it is doubtful if their advice in the present instance is any more sound than that given by the Committee in 1917-18. Publishers who follow it, without looking into conditions for themselves, may have as much cause for regret as did those who followed the committee's advice three years ago. There were numerous newspaper publishers who disregarded the advice of their committee at that time and entered upon firm contracts at the then prevailing prices, very much to their subsequent peace of mind and financial profit. It is quite possible that their experience too, may be repeated. The indications, despite all that is said to the contrary, are for a firmer newsprint market in the near future.

FREIGHT FROM EUROPE LESS THAN BY RAIL.

Chicago, Ill., Nov. 1. "It costs $2 less to ship a ton of newsprint paper from Germany to New York City than to ship a ton of the same paper from Niagara Falls across the state of New York.

"America's paper industry faces serious competition from foreign lands not alone because of the fact that foreign paper is made by cheap labor, under depreciated exchange conditions, but also of the cost of freight shipments."

These were two notable statements in a discussion of paper importations by R. S. Kellogg, Secretary of the News Print Service Bureau, before the Salesmen's Association of the Paper Industry, at the convention of that Association this morning. He then went on to give figures showing comparative freights between foreign shipping points and American points, as evidence of the conditions confronting the paper industry in general.

The rate from Hamburg to New York and other Eastern ports is $4 per 1,000 kilos or $3.64 per ton of 2,000 pounds, and $6 per long ton or $5.36 per 2,000 pounds from Scandinavia. Compared with this are rates from various important American mills. The rate from Watertown and Glens Falls to New York is $5.60 and from Niagara Falls, $5.70. The Watertown rate to Philadelphia and Baltimore is $6.30. Typical rates from important Canadian shipping points to New York are: Espanola, Ont., $10.50; Grand Mere, Que., $7.50; Iroquois Falls, Ont., $9.60; Jonquiere, Que., $8.60; Ottawa, Ontario, $7.60; Sault Ste. Marie, Ont., $10.50; Three Rivers, Que., $7.60. Maine-New York City rates are not much better than the Canadian, the Livermore Falls rate being $6.40 and the Millinocket Rate $7.70. From Port Edwards, Wis., to New York City is $11.30; to Philadelphia $10.90, and to Baltimore $10.70.

"America, even with the best, fastest and most modern paper mills in the world," said Mr. Kellegg, "cannot successfully compete with the prices of European paper made and shipped under these conditions. It is the publishers who will suffer in the long run, for American mills cannot make paper to meet present European prices, and Europe cannot supply America's permanent needs. The normal result would be wide swings in prices which are always disadvantageous to producer and purchaser alike in any commodity where price extremes are found."

"It is better for the American user of newsprint to have a dependable source of supply at home at a price which affords a reasonable profit to the manufacturer and thus encourage greater production than to have a temporary supply from abroad at prices fixed by ruinous unfair competition, which will vanish when world conditions again approach normal."

COST ASSOCIATION OFFICERS.

The Cost Association of the Paper Industry held its sixth semi-annual convention, Thursday and Friday, October 6 and 7, at the Drake Hotel, Chicago. The meeting came to a successful conclusion Friday night, after the banquet.

While there were speakers who attended during the two days' meetings, who in their addresses brought in other topics, the convention was given over almost entirely to the subject of cost systems which are used in the industry, and how these could be perfected.

Starting with the first session, everyone attending was busy learning or teaching. The first session was one of business. The president delivered an address of welcome, the secretary made his semi-annual report, matters of general business of the organization were taken up and then followed the election of officers for the period from October, 1921, to October, 1922.

Election of Officers.

The new officers are as follows:

President, Seth L. Bush, manager of research, Crocker-McElwain Company, Chemical Paper Manufacturing Company, Holyoke, Mass.

First vice-president, Dr. R. E. Rindfusz, secretary, American Writing Paper Company, Holyoke, Mass.

Second vice-president, Jacob Kindleberger, president Kalamazoo Vegetable Parchment Paper Co., Kalamazoo, Mich.

Third vice-president, C. A. Jasperson, secretary, Nekoosa-Erwards Company, Nekoosa, Wis.

Fourth vice-president, John Schmidt, of Schmidt & Ault Paper Company, York, Pa.

Executive Committee.—S. L. Bush, re-elected president; R. E. Rindfusz, first vice-president; B. A. Franklin, vice-president of the Strathmore Paper Company; Jas. A. Reilly, American Writing Paper Company, and H. R. Weaver of the International Paper Company.

TRADE ASSOCIATION VITAL TO BUSINESS PROGRESS.

Chicago, Ill., Oct. 26.—"The trust is imperialism. The trade association is democracy. Any organization which assumes the dominating, monopolistic, dictatorial attitude of imperialism, whether that organization is of business, labor or politics will fall as surely as imperialistic houses of Europe have fallen before the onward sweep of political democracy," said O. B. Towne, secretary of the Waxed Paper Manufacturers' Association, in discussing the Philosophy of the Trade Association before the National Convention of the Association Trade Executives at its opening session today. "Imperialism in business is economically unsound. It therefore cannot survive, for the principle of economics is eternally operative. It recognizes no time, no political boundaries, no nationality, no latitude or longitude, no race or creed. It is the same in substance as it has always been and will always be.

In the earliest days men gathered together when faced by danger, for protection against disaster. But as soon as such groups of men became aggressive, and compelled tribute they fell. That which is economically unsound undermines itself and falls.

"The American business man today is no longer a citizen of American only, but his citizenship is of the world. His business is no longer confined within the nation's boundaries, but is world-wide. And to meet the competition of the world, the brightest minds of every industry must group to give to each the experience of all. That is the trade association.

"The trade association, like all other orgnizations, has three fields, one of which is fatal to itself. The trade association is a group of men in a similar business activity associated together for protection against common evils, and for the development of processes and methods, improvement of manufacturing or distributing processes. The moment the trade association goes into the aggressive field, to demand tribute, the economic law begins to work, and the association cannot survive. Today, the American government has recognized this to the extent that law compels the trade association to remain within its two legitimate fields, and to prevent its own suicide through improper activities. The trust is imperialistic when it desregards responsibility. The association is the democracy of industry because it has group purpose, group effort and group responsibility and the principle of the greatest good to the greatest number."

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Boabab Fiber. World's Paper Trade Review, lxxvi, 4, July 22, 1921. A British patent has been granted to ABRAHAM WOOD, Lower Broughton Manchester, and GEORGE RUSSELL, Higher Broughton, on an apparatus for keeping the breast roll in the same relative position to the endless wire which passes over it no matter what the extent of the shaking motion is, so that a much better sheet of paper is made than is possible under the present conditions.—A. C.

A-1. Determining the Moisture in Wood. Paper Industry, ii, 3 (June, 1921). A description of a method used by the Forest Products Laboratory for the determining of moisture in wood. This method involves the use of coal oil, requires little equipment and but a few moments of time.—A. C.

A-6. Testing Coal. E. C. MILHAM, **Paper Industry,** ii, 3 (June, 1921). A description of the methods used in making tests for determining the value of coal before it is burned.—A. C.

A-7. Sulphur and Pyrites in Finland. World's Paper Trade Review, lxxv, 25, p. 2250, June 24, 1921. After lying forgotten or unexploited since early in the eighteenth century, valuable sulphur ore deposits were rediscovered in the fall of 1918 at Otravaara, in the Eno district of eastern Finland.—A. C.

B-4. Pulp from Veneer. World's Paper Trade Review, lxxv, 24, June 17, 1921. In the wood waste from veneer factories the United States Forest Products Laboratory sees considerable raw material suitable for the manufacture of high grade of paper. The cores of many kinds of veneer logs, now used in large part for fuel, would make excellent pulpwood. In addition a large part of the clippings and small veneer waste, which amounts to one-fifth of the total veneer cut, probably could be turned into pulp stock with profit. —A. C.

B-0; C-0. Relation of Moisture to Decay of Wood. WALTER H. SNELL, **Paper Industry,** iii, 2, May, 1921. An article relating what is thus far known regarding air and moisture relations of fungi which decay wood. The writer's experiment with five different fungi, four of which occur on pulpwood, shows that 60 per cent of water in the logs will eliminate all danger of serious loss from decay. A constant spray or "artificial fog" will keep the logs sufficiently wet to protect them from both fire and decay. Logs so wet will mould on the outside, but moulds do not damage wood beyond discoloring it superficially.—A. C.

E-5. Preliminary Impregnation in Cooking Sulphite. VANCE P. EDWARDES, **Paper Industry,** iii, 2 (May, 1921). Results of experiments show a way of reducing the cooking time in the sulphite process without injuring the quality of the pulp. A. C.

K-12. New Drying Arrangement. World's Paper Trade Review, lxxvi, 5, July 29, 1921. An object of an invention by FRANK P. MILLER is to reduce the ground area usually required by a papermaking machine, and this is accomplished by placing the drying cylinders on a floor, specially constructed above that on which are making mechanism and the calendering rolls and cutters. It has been found by the arrangement described that there can be saved about 50 per cent in the length of the building and that the paper can be protected while it is being formed, as well as the finished paper, from moisture from the dryers, and that the moisture can be carried off as soon as formed.—A. C.

K-22. Cigarette Paper from Sulphite Pulp. World's Paper Trade Review, lxxv, 25, July 29, 1921. According to **Papier Zeitung**, a patent has been granted to the Mannheim Waldhof Company for the manufacture of cigarette paper from sulphite cellulose. Hitherto it has been impossible to employ this form of pulp for cigarette paper.—A. C.

N-4. Improving Boiler Room Practice. ROBERT JUNE, **Paper Industry,** iii, 4 (July, 1921). The use of cheaper coal, elimination of smoke and reduction of labor through better methods of combustion.—A. C.

N-0. Power Plant Management. ROBERT JUNE, **Paper Inlustry,** iii, 2 (May, 1921). An article describing a bonus system for boiler room employees.—A. C.

P-4. First Aid to Injured. FRED. M. ROSSELAND, **Paper Industry,** iii, 4 (July, 1921). Purposes of first aid, means of preventing infection, the kit, teams and cabinets and the training of employees to give first aid.—A. C.

R-1. Papermaking in India. World's Paper Trade Review, lxxv, 24, June 17, 1921. L. S. SUBRAMANIYA. Aiyar, B.A., in the course of a plea for more paper mills in India, which he makes in the **Business World** published in Madras, refers to the efforts in western countries to provide new raw materials and contracts with the dearth elsewhere to wealth of forest lands in India. Reference is also made to the exploitation of bamboo in Trinidad.—A. C.

R-7. Handling the Employment Problem. F. H. ROSEBUSH, **Paper Industry,** iii, 4 (July, 1921). An illustration of how the employment work is handled at the Nekoosa-Edwards Paper Company.—A. C.

R-12. Paper Pulp. World's Paper Trade Review, lxxvi, 2, July 8, 1921, p. 146. India's resources in relation to the British market.—A. C.

R-0. Dearer Postage. Paper Making, xl, 6, June, 1921. The government, in order to make up for losses on the telegraph and telephone srevices, proposes to burden heavily the postal service which even the government cannot afford to run at a loss. This is forcing merchants and British publishers to print elsewhere. British circulars sent out wholesale will be printed in Holland on Dutch or German paper and posted in Germany, or, at any rate, abroad.—A. C.

Why beholdest thou the cigarette that is in thy son's mouth, and considerest not the cigar that is in thine own mouth? Or wilt thou say to thy son, "Let me pull out the cigarette out of thy mouth," and behold a cigar is in thine own mouth? Thou hypocrite! First cast out the cigar out of thine own mouth, and then shalt thou be prepared to cast out the cigarette out of thy son's mouth (or thy daughter's).—"The Missionary World."

PAPER MILLS REDUCE WINTER CUT OF WOOD.

Chicago, Ill., Nov. 2.—Heavy reductions in woods operations by the paper and pulp manufacturers of the United States were reported at the convention today of the Woodlands Section of the American Paper and Pulp Association when Secretary O. M. Porter gave the results of a survey of wood on hand and projected operations.

There will be no immediate shortage of raw material for the reports indicate that there is still a large quantity of pulpwood in the hands of the manufacturers, even though this was put in at prices far above the presumptive cost of woods operations during the coming winter.

"Reports from forty-eight companies, "said Secretary Porter, "are sufficiently distributed to provide probably an accurate estimate of the whole situation, seventeen being from New York, nineteen from the lake states, six from New England, three from Pennsylvania and three from the west."

The 1920 consumption of pulp wood by these mills was 1,855,005 cords and their stocks on hand on September 1 was 2,292,483 cords. Pulp manufacturers usually carry two years stock of wood on hand, but this year are putting in only 792,630 cords. In view of the reduced operations in mills of the entire country, the total now on hand or contracted for of over 3,000,000 cords, normally only enough for 20 months, will be practically a two years supply, indicating no shortage the coming year. The small input this year, however, less than one half of last year's consumption, portends extremely low stocks in the fall of 1922.

"These figures", says Secretary Porter in his conclusion, "reflect very clearly the present pulpwood market situation. American mills are overstocked with high priced wood, and are curtailing their logging operations, in many cases from 50 to 70 per cent of the 1920 operations. Of the 87 mills making reports, 27 reported they were making no contracts for any wood this winter."

ASSOCIATION OFFICER PLEADS FOR TRADE JOURNALS.

New York, Oct. 3.—The relation of the trade association to the trade journal, as well as the possibility of close cooperation by the trade association with the house organs published by individual members of the particular industry involved formed the subject of extensive discussion at the monthly meeting of trade secretaries of New York on Tuesday, October 18th.

The speaker of the day was Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, who struck what seemed to be the keynote of the day, in his declaration that the trade association should endeavor to cooperate with the trade journals of his industry.

"The official publication of a trade association, its bulletin or magazine or whatever form its published material may take, should never be of a nature to place the association publication in competition with the trade journal", said Dr. Baker. "The trade journal has a vital field in industry, just as well-defined and as helpful to the industry as the trade association. To cooperate with the trade journal, and not to publish a journal in opposition should be the aim of the trade association secretary.

"Particularly, I believe, is this true of the question of advertising. I doubt if the solicitation of advertising by an association publication is right or proper. In most cases it is too close to the use of the big stick against those dealing in supplies for the industry, and might easily be unfair competition with the trade journal which means so much to the business man.

"In the American Paper and Pulp Association, care is exercised to maintain most harmonious relations with the trade journals. They are provided with all of the material published in the Association bulletin to its members, either simultaneously or in advance of its publication by the association publication. The bulletin of the association acts as an auxiliary to the trade journal to take merely official announcements of the industry to its members."

PRESIDENT OF TRADE EXECUTIVES SCORES ILLEGAL ASSOCIATIONS.

Chicago, Ill., Oct. 26.—"First among the standards of the Trade Executive should, I believe, be absolute open cooperation on the part of our respective associations with the United States Government and with the public at large, and personally I approve Mr. Hoover's suggestion of open information," said President Emmet Hay Naylor of the American Trade Association Executives, in opening the annual convention today. Mr. Naylor, who is secretary of the associations of fine paper manufacturers, and one of the best known secretaries whose organizations are federated in the American Paper and Pulp Association, continued:

"By reporting definite representative information to the Government the association will be strengthened, and benefit will come not only to the industry, but to our national industrial stability through a clear, frank understanding of facts. If the reports of an association are carefully and accurately compiled, they can only benefit the industry and the members of the Association by being made public. If they misrepresent and hurt the industry, it is because the Trade Association has not accurately compiled and presented the facts. The elimination of mushroom, illegal trade associations is absolutely necessary not only for the good of the public, but for the good of our profession as a trade association.

"I cannot resist very forcefully suggesting that if the general facts about business conditions in an industry are to be made public through a Government agency that the Government Agency use the Trade Association which represents that industry as the source of correct information. Otherwise, there would have to be a board of experts at Washington for practically every industry, to do the work in which the existing trade association is a specialist.

THE NEWSPRINT SITUATION.

The abandonment of the threatened railroad strike in the United States has not resulted in cancellations of rush orders for newsprint which Canadian mills received when the strike seemed certain. Most of the mills report that they are filled up with orders for thirty days ahead. In some instances, temporary orders for immediate delivery have been rejected even when there was no question of price involved.

Trade publications this week indicate some revival in the American newspaper publishing business. The Scripps-McRae League, which publishes twenty-five dailies in different cities announces the inauguration of two new papers, one in Washington, D.C. and another in Knoxville, Tenn., and plans for the installation of twenty additional daily papers within the next four years, five to be undertaken in 1922. A large German language daily paper in Chicago, suspended during the war, has resumed publication. A new daily was started in Flint, Mich., November 1st, and one is planned for Seattle, January 1st.

PULP AND PAPER NEWS

The reopening of the Riordon Company's large pulp and sulphite mill at Kipawa not merely indicates an increased demand for the grades of pulp produced there but it also means the affording of employment to a considerable number of men. About 300 and 400 men in the Ottawa district have, it is understood, been taken on by the reopened plant, and this number may be expected to be largely augmented as operations at the Kipawa mill develop.

Gratifying reports are coming to hand respecting production at the Spanish River plants. These are understood to be operating at full capacity.

The receiver for the Mattagami Pulp and Paper Company, Ltd., has sent to the bond and debenture holders of the Company a letter reviewing the Company's position at the present time, and stating that interest charges maturing on bonds and debentures on Tuesday of this week will be deferred. The Company is reported to have received orders for pulp at prices which pay operating charges, but do not afford a profit. The sale of the product in this way is permitting the working off of inventories, and, it is stated in the letter referred to, will bring about either a reduction in the banking liabilities of the Company or the substitution of lower priced materials for those on hand. A statement of assets and liabilities will be issued shortly. The Mattagami Company, it may be added, formerly conducted its own camp for cutting operations, but, this year, the work is being done through jobbers. Quite a quantity of pulpwood is being taken out.

The printers' strike in Toronto is still in process. There have, the last week or two, been rumors afloat, which profess to be well authenticated, to the effect that a settlement may be brought about this week or next. But as similar rumors have been rife about every three or four weeks since the inception of the strike, it is not safe to attach any special credence to these latest. That the strike has been a serious impediment to the paper business, just at a time when that business could least afford to be hampered and hindered by any such thing, is, of course, beyond dispute. But considerations of that kind will, as events have shown, play little, if any, part in bringing about a settlement, if a settlement comes about, it will be rather because of pecuniary difficulties experienced by one side or the other—and possibly by both—in continuing longer.

A very favorable impression has been created in pulp and paper circles generally by the figures presented by Hon. T. W. McGarry, president of the Whalen Pulp and Paper Company, Ltd., at the recent annual meeting of that Company. The Company appears, from the figures in question, to have enjoyed a very successful year. The physical condition of the concern was stated to be in excellent shape, and it was also reported that the sum of $858,735 had been expended on capital improvements. But Mr. McGarry added that no further capital expenditure would be incurred unless essential to the prosperity of the industry. The Company's production of pulp, last year, was 51,731 tons—an increase of nearly 4,000 tons over that of the previous year.

The Ontario Timber Commission, which first commenced its enquiries more than a year ago, has been sitting for the last three weeks in Toronto after an adjournment of some months. The public are displaying considerable interest in some of the evidence which is being produced before that body—notably in the evidence to the effect that certain tenders were withdrawn for pecuniary considerations.

Paper Trade Meeting.

Beyond a brief notice of the satisfactory character of the attendance, and the importance of the subjects discussed, at the fourth annual convention of the Canadian Paper Trade Association, held at the Windsor Hotel, Montreal, an account of the proceedings thereat has not appeared in these colums. It may therefore be well to give a brief resumé of the proceedings. The Convention was held on the 12th and 13th of last month and throughout was marked by a gratifying spirit of optimism as regards the future of the trade. The attendance included representatives of leading paper firms all over Canada.

In this review of the work of the year, Mr. C. W. Graham, president of the Association, emphasized the value of the organization, in a period of considerable strain, in preventing disaster by its insistence on the advisability of a conservative policy. He pointed with some pride to the fact that few orders from paper dealers to manufacturers had been cancelled, although taking delivery meant almost certain loss to the buyer. As he rightly said, it is remarkable that, with heavy liabilities, huge stocks, and small demand, there was no dumping of goods on the market at slaughter prices, but, instead, an adherence to a wise policy—in this connection he paid a high tribute to the members of the Canadian Pulp and Paper Association for their co-operation—which made it possible for the undertaking confined in the organization to be brought through a turbulent period with a minimum of loss. Losses, he added, had, in most cases, been met out of reserves which wise dealers had set aside for the purpose, and which are of sufficient size to take care of any possible further reductions. Of the many matters brought under the consideration of the Association during the year, one of the most important was the application for more equitable treatment by the mills, by an increase in the number of lines which the manufacturers are desirous of distributing through the paper dealers, or a fair basis. He added that the Association is still working with the Canadian Pulp and Paper Association to improve conditions and to remedy some inequalities which have grown up from time to time.

The treasurer of the Association, Mr. E. S. Munroe, presented a satisfactory financial report, and the secretary Mr. N. L. Martin, in his report, stated that the work of the Association in the past year had been more active than in any preceding year, and that the membership comprised every fine paper maker in Canada, with one exception. Mr. Martin laid stress on the fact that, while, in some lines of business, efforts to get orders and a glut of merchandise, has created conditions approaching demoralization, the cordial understanding between the paper mills and the merchants, fostered by the existence of their respective organizations, had prevented any such collapse in the paper trade.

Among the papers read at the Convention was one by Mr. A. Clarke Hunt, manager of the John Martin Paper Company, of Winnipeg, on the timely subject of "Knowing Costs in Paper Merchandizing." The mill organization was represented by Mr. A. L. Dawe, secretary of the Canadian Pulp and Paper Association, and a number of its members. The officers for the coming year were elected as follows: Mr. C. F. Kay, of Vancouver, president; Mr. George Wilson, of Winnipeg, 1st vice-president; Mr. J. F. Larkin, of Montreal, 2nd vice-president; Mr. E. S. Munroe, of Toronto, treasurer; and Mr. N. L. Martin, of Toronto, secretary.

LOWER STUMPAGE RATES IN B. C.

St. John, N.B., Oct. 25.—At a meeting of the provincial Government here this afternoon, special stumpage rates of $4 per 1,000 feet on spruce and $2 per thousand feet on fir cut on Crown lands, were fixed. Premier Foster presided.

A memorandum from Colonel Loggie, deputy minister of lands and mines, in regard to the order-in-council passed at a previous meeting providing for an allowance to lumbermen for cutting budworm-killed and burnt over timber, was received and considered. Under this order-in-council the rate on this class of lumber was fixed at one-half the regular rate. Owing to the difficulty of having the lands examined in time for this year's operations, it was recommended, as a result of a careful investigation which had been made by the Forestry Department, that a flat rate be put into force of $4 per thousand for spruce and $2 per thousand for fir, with the proviso that this rate would only apply in cases where an effort was being made to save the dead timber, and where the cut of dead fir amounted to forty per cent. of the whole operation in that district.

This action by the Government will enable the lumbermen to commence operations at once, and it is hoped that it will tend to the saving of timber which would otherwise be lost, and also assist in some degree to relieve the unemployment situation.

The International Paper Company has increased production to 700 tons daily, or close to 60 per cent. Additional mills are expected to be placed in operation shortly. Of the 700 tons now being produced daily, 500 tons are news print. Eleven mills of the company are operating. Officials claim that in the event of a railroad strike operations would not be hampered. The chief item of raw material is wood of which there are ample supplies at the mills.

Evening classes are being organized at Bathurst, N.B.. Arrangements will be made so that tour workers in the pulp mill will not lose any of the instruction by reason of their work schedule.

An American journal announced a few days ago, that Bagley & Sewall are making four machines for the St. Maurice Paper Co. at Three Rivers. Evidently this is intended to mean the St. Maurice Lumber Co., an "alias" for the International Paper Co. The machines are practically complete and W. D. Carnes has come on from Watertown to supervise their erection.

BOOK REVIEW.

FROM PAPER MILL TO PRESS ROOM. By William Bond Wheelwright. Published by the George Banta Publishing Company, Menasha, Wis. Price $2.00.

When a man inherits a fondness and knack for paper making from his grandfather who entered the business in 1834 and has, in addition to practical experience in paper manufacture, a first hand knowledge of the principal uses of paper, he is in a position to write with authority on the subject chosen for the title of this book. Mr. Wheelwright has told his story in a most interesting way and with an occasional illustration which serves to give the reader a good notion of the principal machines and arrangement in the mill.

The story begins wit a short chapter on the origin and history of paper making and then takes up the subjects of raw materials, future fibre possibilities, and a description of the characters and behavior of the principal constitutents of paper. The paper making process from beaters to the finished paper is briefly covered in two chapters and then we find chapters on the physical and chemical aspects of paper in which special attention is given to those qualities which affect its use in printing. The chapter also on appraising and testing paper is evidently written with the printer in mind as the principal reader. The chapter on pressroom difficulties should prove a particularly valuable one as it is written by a man who understands both sides of what often develops into acrimonious discussion when troubles occur whose origin and correction are understood by only one side or neither.

Following this is an interesting account of the paper trade which explains the principal methods of merchandising paper.

Chapter 12 is no doubt a very interesting one but it is either accidentally omitted or chapter 13 is incorrectly numbered. Perhaps the mistake is intentional in order to give greater emphasis to the concluding pages of the book wherein special attention is drawn "to the importance of a knowledge of printing." This chapter contains so much in the way of valuable suggestion that it is to be printed in full in this magazine at an early date.

A book of this kind is necessarily elementary. It is impossible of course, to cover adequately either the manufacturing or the use or the properties of paper in one hundred pages but with the principal points carefully and concisely stated, there is a great deal of very helpful information in it for both the paper maker and the printer.

The book is printed on Wheelwright's "B.P.F." paper 25 x 38 - 70. It is an excellent piece of printing and we find relatively few typographical errors. The statistics are a bit old as 1916 is the last date mentioned but the references to output are still helpful as regards relative production of the various kinds of paper.

A license for an electro-hydraulic development at Orchard Lake, Alaska, has been obtained from the Federal Power Commission by the Alaskan-American Paper Corporation. The power developed through hydraulic turbines to be installed at a dammed point of the lake will be utilized to operate a pulp and paper mill located at the head of Shrimp Bay. All pulpwood grinding machinery will be directly connected to hydraulic turbines, and all other machinery and appliances in the mill will be electric-power driven.

WHALENS MAY START THIRD MILL.

Toronto Oct. 31.--Whalen Pulp and Paper outlook has improved to the extent that consideration is now being given to the re-opening of the third mill within a month or six weeks. This announcement followed a meeting of the directors here today, the first meeting since the annual held recently at Vancouver. At present the plants at Port Alice and Howe Sound are in operation, the third being at Swanson Bay, about 70 miles south of Prince Rupert. The plant at Howe Sound narrowly escaped destruction on Saturday, being within a mile of the scene of the cloudburst which did so much damage at the Britannia settlement. Word received yesterday indicated that the company's property had entirely escaped injury.

HON. T. W. McGARRY, K. C.,
President, Whalen Pulp and Paper Mill, Ltd. Sulphite Makers, Vancouver.

The directors at their meeting today re-elected Hon. T. W. McGarry president, and made W. D. Ross, who has been a director for some time, vice-president of the company. Mr. McGarry will leave next week on another visit to the company's property and a more definite announcement as to the opening of the Swanson Bay plant will follow. At present the company is enjoying a good export business, mainly with Japan, and conditions are said to be steadily improving.

LOOKING UP LABRADOR'S PEDIGREE.

Winnipeg, Oct. 29. The contention that Newfoundland can have any claim upon Labrador was disputed last night by Bram Thompson, a barrister, of Regina, and editor of the Canadian Law Times.

Mr. Thompson stated that Newfoundland had never been given any rights of ownership to any part of Labrador, but was, "as a matter of administrative expediency given administrative control of the country." He further stated that the whole of Labrador rightly belongs to Quebec.

The question will stortly come up before the Privy Council. Sir Patrick McGarth, a Newfoundland statesman, is at present in the city looking into the archives of the Hudson's Bay Company for information regarding the Labrador boundaries.

MARKET FOR PAPER FELTS IN JAPAN.

By Trade Commissioner A. E. BRYAN, in the Weekly Bulletin.

Yokohama, September 15, 1921.—The largest single business done in paper felts in Japan is by Toyo Shokwai of Tokyo, who are sole agents for the felts made by F. C. Huyck & Sons, Albany, New York. This firm controls the Kenwood Mills Ltd. of Arnprior, Ontario. Of late all these felts have been coming from the Canadian plant, and the writer has seen many cases of these Canadian felts unloaded from C. P. R. ships. Another Japanese firm—the Meishosha Company, Ltd., of Tokyo—represent another United States firm, do considerable business, and have their own representative working with their agents here. There are also three or four English felts represented on this market by various British commission houses, and the bulk of the imports of felts come from English manufacturers, although American felt importations have been on the increase during the last four years.

The felts most in demand, outside of the ordinary groundwood and sulphite felts, are as under: Top and bottom cylinder wet felts; press felts for all grades of boards; press felts for high quality box boards; wet felts and press felts for fourdrinier machines; 1st, 2nd and 3rd press felts for news.

Felts Now Manufactured in Japan.

Of late two Japanese woollen mills have begun the manufacture of felts, but they are practically in the experimental stage, and the writer has heard of no important mills which are using the local product. The larger mills here usually place their orders well ahead of time with their supliers. In few cases do the larger mills buy their own felts direct from the manufacturers abroad, but are generally content with buying from the local agents in Japan of foreign makers. Just at present the mills are working at a reduction of 20 per cent of output, with a corresponding decline in the demand for felts. In 1920 felts were imported to the extent of over 100,000 pounds at a value of yen 395,945, as compared with only 31,122 pounds in 1919 at a value of yen 118,000.

Any Canadian mills wishing business here must send out their own representative to make his goods known to the mills, and to appoint a firm to represent them here. The Department of Trade and Commerce have a list of firms handling paper machinery and supplies as well as a general list of importers of paper pulp, any one of whom would also be interested in other supplies for paper mills.

Particulars regarding the chief mills in Japan, the kind of paper manufactured, their output and the number and size of machines, are on file at the Department of Trade and Commerce, Ottawa, and may be obtained by interested Canadian firms on application to the Director, Commercial Intelligence Service (quoting File No. T.C.-2-110).

ST. GEORGE MILLS RESUME.

St. George, N.B., Oct. 25.—Operations have been resumed at the St. George Pulp and Paper Company's mills, a New York concern, after a shut-down of six weeks, due to low water.

The Metabetchouan Pulp Co. are erecting at Metabetchouan, Lac St. Jean, County Que., a new sulphite mill, sawmill, boarding houses and sheds. The total expenditure will be $750,000.

UNITED STATES NOTES

A group of controlling stockholders of the St. Regis Paper Company, Watertown, New York, have acquired through purchase the common stock holdings of the Hanna Brothers, Carl H. and Mark A. 2nd, in the Hanna Paper Corporation. The latter, grandsons of the late United States Senator Marcus A. Hanna, will retire from active connection with the paper industry in Watertown. They will retain their preferred stock but will dispose of their residences in the Northern New York town and move to Cleveland. Mark A. Hanna, together with Joseph B. Seaman of New York and G. M. Seaman of Chicago, will continue to have places in the directorate of the company. Floyd L. Carlisle, president of the St. Regis, was chosen to head of the Hanna Company for the sale, and the management of the St. Regis will extend over the management of the Hanna company. The purchase gives the St. Regis a total daily production of about 500 tons, of which about 300 is newsprint. It makes the company third in importance as manufacturers of paper in the United States. The sale includes the Norwood and St. Lawrence Railroad.

The Menasha Printing and Carton Company, Menasha, Wis., has paid employees a production bonus totalling $2,400. This represents the first payment under a new bonus plan adopted last July. These bonus payments will be given out quarterly.

The Marinette and Menominee Paper Company has sold $2,000,000 of first closed 7½ per cent gold bonds to a syndicate composed of Spencer Trask & Co., the First Wisconsin Company and Edgar Licker & Co., of Milwaukee. The bonds are gauranteed as to principal and interest by the Continental Bag and Paper Company.

D. R. Mead, former manager of the Peshtigo Pulp and Paper Company, has been absolved by a Wisconsin jury of a charge brought by his former employers that had caused a loss estimated at $100,000 through gross negligence and mismanagement. It was alleged that Mr. Mead had deliberately mismanaged the concern's affairs, and that considerable loss resulted following his resignation. The specific charges against Mr. Mead were that he had negligently declined to take an order for 100 tons of paper from the Seaman Paper Company, that he had sold 36,000 pounds of paper to the Protecto Paper Cup Company for at less than the market price in order to obtain a commission and that he was negligent in the purchase of mill wrappers The trial of the case consumed eight days, but the jury found in favor of the defendant after only forty-five minutes of deliberation.

The dangers of forest denudation and the need of increased timber production were outlined by James W. Toumey, dean of the School of Forestry, Yale University, in an address last Thursday at New Haven. Dean Toumey declared an increasing scarcity of wood ultimately would result in a permanent shrinkage in many industries. "Out of the original 822,000,000 acres of forests in the United States," he said, "The last vestige of virgin forests will disappear in fifty years."

With the view to establishing a paper commodity division in the Bureau of Foreign and Domestic Commerce, officials of the Department of Commerce have been seeking to interest several paper executives to take charge of such a division. As no one has indicated a willingness to take up the work of organizing a special division at this time, it is thought that some arrangement may be worked out placing an expert on paper under the so-called specialties division.

David Hirshfield, New York City Commissioner of Accounts, in a statement to the press last week, charged that the International Paper Company had benefited on the Beaver River, in the Adirondacks, through the canalizing, damming and diversion of waters by the State. The company, Mr. Hirshfield alleged wanted a water course for floating pulp logs all the way from the forests to its mill. It attained its purpose he asserted after getting the New York Legislature and several State Departments to recognize the claim that its water power rights had been damaged through the State's canalizing of an adjacent river. A vigorous denial to the entire charge was issued by P. T. Dodge, president of the International Paper Company, who characterized it as having no justification whatever and no basis in fact. Mr. Dodge in his statement said that the International Paper Company has not now, and never did have any mill or mills on the Beaver River, or any interest direct or indirect in any such mills. He said that the dates and particulars cited by Mr. Hirshfield are inconsistent with matters of record he himself gave out.

In most of the States in the northern part of the country, where a mixed growth of hardwood and of soft wood was native to the soil, there has been a marked change in growth all in the one direction. The hard wood has given way to the soft. Persons who have observed with any thought the appearance of New England landscapes for over fifty years or more are well aware that the hills are now wearing darker robes than they were when the now old men were boys. Everywhere the change appears to be in the same direction, from the deciduous trees to the evergreen; that is, from those of the falling leaf to those that keep their verdure all the year round. Authorities on forestry have remarked the fact that when one species of trees has been removed its place is regularly taken by trees of another kind. This is accounted for by some on the supposition that the soil has become impoverished of elements that supported original growth, and that it is no longer suited to the further production of such forests. While this may be true, in part, the more likely reason ascribed by forestry experts who have been asked their views is that the change in species is due to changing conditions rather than to soil impoverishment.

Scandinavian newsprint contracted for in large amounts by a leading Los Angeles publisher has proved so unsatisfactory that the last lot of 2,000 tons to arrive at San Pedro harbor has been rejected. A previous shipment of approximately the same quantity was found in a damaged condition. The publisher put in a claim for $10,000 on this consignment and, failing to get a settlement, put a libel on the steamship "Asia" which carried the goods.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 29th Oct. In nearly every line in the paper industry, September was the best month experienced for many moons. And it may confidently be predicted that October will prove to have been a very good deal better, all along the line than September. The improvement in the whole paper situation, which has been chronicled in these columns for several weeks now, continues without any sign of abatement. It is just that quality and calibre of improvement which men of wisdom most desire—after a period of more or less prolonged and acute depression—a gradual and progressive, not a fast and furious, improvement. In nearly all lines, business is betting better from week to week. And, according to wholesalers with whom the writer has talked the betterment exhibits all the hall-marks which predicate a still more pronounced business activity for the opening of next year. Nearly all grades of paper are moving better. Nearly all mills are increasing their output, on a graduated scale, from month to month. Stocks in the hands of consumers and in warehouses alike had been allowed to become abnormally depleted, and among both jobbers and consumers buying, until within the last couple of months or so, had been of a very discouragingly and persistently "hand-to-mouth" kind. Now stocks are being replenished. And when they have been replenished, it appears almost certain (if one has regard to the almost unanimous predictions of men prominent in various departments of the industry) a continuance of improved general conditions in the industry will maintain and expand production and distribution both. Of course, one does not find precisely the same degree or the same kind, of optimism prevailing either among all branches of the trade or among all representatives of the industry with whom one discusses the question of conditions. But the writer has yet to meet either a representative manufacturer or a representative wholesaler who does not recognize that conditions, as they exist at this moment, are symptomatic and significant of a substantial recovery—and a recovery of the right stamp from the depression which marked the first two thirds of the year.

Right here, there is one matter which may be mentioned, as it is one which paper men are constantly emphasizing in talking with the writer. That is what they term the high cost of printing. They point out that, if printing prices were to take a slight journey on the toboggan, the result would pretty speedily be that there would be a distinct increase in paper buying. But it seems to be pretty generally apprehended that, should the striking printers in Toronto and elsewhere get their way, printing prices would not take the desired tumble.

PULPWOOD.—It is now quite certain that, although one or two companies are taking out quite a bit of wood, the present season is going to be one of unusual quietness in logging operations. Yet by reason of the greatly curtailed wages of the men in the woods, pulpwood concerns now have the chance of conducting such operations at a good deal less than half of their cost a year ago. For, in addition to lower wages, they now have the advantage, owing to the limited scope of cutting, hauling and driving operations generally, of commanding far more efficient as well as more abundant help.

PULP.—The pulp market, as a whole continues quiet, though with some symptoms of an increase in demand—and, in some lines, a marked increase. Prices are somewhat variable. The writer was told this week, by a high authority on the whole pulp situation, that the demand for easy bleaching and strong sulphite is still very far from what it should be. This he attributed to the competition from Sweden and Germany which, he said, constituted a very serious handicap to concerns manufacturing these grades. Not until pulp from these foreign sources disappears from the market will pulp conditions on this continent be as they should. However, should the consumption of pulp in Europe experience a revival—as it is anticipated, in some quarters, that it may likely do in the near future—the situation would be altered materially for the better. On the whole, there has been some improvement in market conditions for pulp, and a further improvement is looked for. This applies particularly to the demand for strong bleached which is on the way to what can be described as good. Easy bleaching is about $57 to $60 at the mill; strong sulphite around $60 at the mill. Bleached is in good demand at 4 cents a lb. at the mill.

NEWSPRINT.—The demand for newsprint will be undoubtedly stimulated by the forthcoming Dominion general election. For already there are signs that all the varied literature, which accompanies, and forms part of a Dominion-wide campaign of appeal to the people will make large demands on the newsprint branch of the industry. Thus far, the Government side is the one which appeals to be the best customer. In Toronto, for example, the bill-boards are largely occupied with enormous pictorial posters, al of them, in varied language and design, imparting the information that "Meighen Will Lead Us Through."

FINE PAPERS.—The market for fine papers continues to improve. This improvement is likely to be rapidly accentuated if some buyers get it firmly into their heads that no recession of prices is to be looked for, but that, on the contrary any price-revision is likely to be upward rather than downward.

MANUFACTURING STATIONERY.—The past few weeks have witnessed quite a considerable change for the better in the manufacturing stationery situation. Indications are that from now on there will be considerable activity in this line.

WRAPPING PAPER.—There has been a marked improvement in the demand for wrapping paper of nearly all kinds in the last few weeks and this continues to be maintained. The prospects for kraft are extremely bright.

TOILETS AND TISSUES.—The business in toilets and tissues continues satisfactory with plenty of orders in hand and prospects in sight, so one manufacturer, whose mills are working to capacity, told the writer this week.

WASTE PAPER. The increased demand for waste paper, which has recently been noted, continues and shows signs of expansion.

NEW YORK MARKETS.

New York, Oct. 29. (Special Correspondence.)—The news that the proposed country wide railroad strike had been definitely called off was received with much elation by members of the paper trade, and has made for a distinctly firmer market undertone. There is little doubt but that the sagging of demand which paper mills have experienced for their product during the past few days was almost entirely due to the contemplated walkout of railway employes, and now that the danger of a railroad tie-up is past, buying of paper by consumers and jobbers is being resumed in more active fashion. Moreover, indications are that most users of paper will now take up the absorption of supplies where they left off a few days ago in fear that should the strike go into effect shipments from mill centres would be greatly delayed in transit. Sentiment throughout business circles has been all along that the strike would not be instituted, and yet the possibility that it would, cause a large number of consumers and dealers to postpone placing orders for paper, as well as various other manufactured commodities, with mills, thus leading to a general slowing up of business recently.

An apt illustration of the marked improvement in the paper industry of the United States within the past several months is to be had in the report of the Federal Trade Commission for September, which shows that substantially more paper was produced by mills in this country in that month than during any month so far this year. The total production of all grades of paper and paper board in September was 477,826 net tons, which is some 30,000 tons in excess of the August output of 442,519 tons, and which in turn was the record production for any month of 1921, the next nearest month being March, when 440,777 tons were produced. When it is considered that production almost steadily declined from last March on until it went down to 370,424 tons in July, it can be readily appreciated how manufacturing operations have increased during the last two or three months. It is also quite significant that shipments out of mills in September were larger than mills' output, aggregating 489,128 net tons of all grades or 11,202 tons over the production, and that mill stocks underwent a considerable decline during the month, amounting to 262,807 tons at the end of September as compared with 274,009 tons at the beginning of the month. These figures show that paper mills are producing at a much larger rate at present than at anytime this year and that they are not alone shipping out all of the current production but also a good part of their stored stocks.

Newsprint is meeting with a consistent demand, and, as previously noted, consumption is steadily on the rise. Advertising in newspapers is increasing at a very noticeable rate, which means that publishers are necessarily enlarging the size of their papers and thus using more newsprint. Some of the New York newspapers are running in part on foreign paper, but it is becoming nothing unusual for publishers to come into the open market to purchase considerable tonnage to augment their supplies; business in spot shipments of print paper showing improvement almost very day. Circulation of newspapers is increasing, as is usually the case at this time of the year. An interesting statement in this connection made by Stanley Clague, managing director of the Audit Bureau of Circulation, at the annual convention of that organization this week in Chicago, is that American newspapers have gained 100 per cent in circulation and the volume of advertising has increased proportionately within the last seven years. This statement is something for manufacturers of newsprint to ponder over. It means that in the comparatively short space of time of seven years that the consumption of print paper by United States publishers has not doubled but has at least tripled, because along with a 100 per cent increase in circulation is a similar jump in advertising, thus necessitating that publishers print twice as large papers and double the number of copies.

Fine papers are moving in better volume, and most mills are gradually liquidating surplus stocks, which makes for a much stronger technical market condition. Jobbers are buying not alone to fill customers' orders but also to augment their low stocks, and prices on all grades of writing and bond papers evince an upward tendency. In fact, mills in frequent cases are falling back somewhat in deliveries, indicating that they are getting more business than they can immediately cope with. The rise in raw material costs is a factor having considerable to do with quotations on fine papers, and manufacturers are becoming extremely cautious about naming prices on forward deliveries.

Book papers are holding firm in price and are in good demand. There is some mill capacity still to be taken up, but the average book paper mill is today running at a fair rate of full production and is shipping out practically all the paper being made. Machine finished book is bringing around 6.50 cents a pound f.o.b. New York, super a quarter to a half cent above this price, and coated and enameled from 9 cents a pound upwards.

Wrappings are in steady call and quotably firm. Tissues are moving in a regular way and at maintained quotations. Boards are in increasing demand. Plain chip and news boards are finding a ready market among set-up paper box manufacturers, while corrugating and folding box boards not only are moving actively but are repeatedly advancing in price.

GROUND WOOD.—Mechanical wood pulp is in steady demand, and while business shows a slow though consistent growth and prices incline decidedly upward, no market changes of importance have occurred this week. Consumers are buying at around $30 per ton f. o.b. producing plants, with now and then sales reported at several dollars in excess of this figure, and, on the other hand, with consumers situated a far ways off from grinding mills said to be obtaining some supply at under $30. Most producers are gaging their f.o.b. shipping point quotations to figure out between $38 and $40 a ton delivered, and seem to be having no trouble getting these prices.

CHEMICAL PULP.—Inquiry for chemical pulp has broadened somewhat since the railroad strike was declared off, and the market appears to be becoming livelier. Paper manufacturers continue to buy mainly to cover direct requirements, but the fact that consumers in general are in need of larger tonnage of pulp than in a long time obviously makes for improvement in business, while some are also looking ahead far enough to place some orders for forward deliveries.

Foreign pulp show a stiffening tendency, which is commonly the case as winter approaches and shipments through the Baltic Sea are held up. Sales of high grade Swedish kraft pulp have been reported at 3 cents per pound ex the dock New York, which although a bit

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above the prices quoted on the usual run of Scandinavian kraft, tends to strengthen quotations generally on foreign kraft pulp. Some qualities of imported kraft are available down to 2.50 cents ex dock, but a more average market level today is 2.75 cents. Bleached sulphite is moving freely, with domestic and Canadian producers of No. 1 bleached receiving 4.25 cents a pound f.o.b. producing mills, and with importers quoting around 4 cents on the dock for No. 1 pulp. News grade sulphite is steady at from 2.50 cents upward, and easy bleaching sulphite is selling freely at from 3 cents a pound up to 3.25 cents.

RAGS. Business in papermaking rags has been a little quieter this week, owing to mills holding back in buying pending the outcome of the proposed railway strike, but prices have changed but slightly, if at all. Dealers in New York are as bullishly inclined as formerly and are not pressing matters, asserting that supplies are coming in from collection sources in small amounts and of poor quality. Roofing rags have sold to felt paper mills at 1.25 cents a pound f.o.b. New York for No. 1 packing, and at around 1.15 cents for mixed satinets, while reports from the Middle West say that dealers there have obtained up to 1.50 cents at shipping points for No. 1 roofing stock. Old whites are firm in price, and dealers quote 6.25 cents and more f.o.b. New York for No. 1 repacked and around 5.75 cents for No. 1 miscellaneous whites. Old thirds and blues are held for 2.25 cents at shipping points for repacked material and from 1.50 cents upward for rough thirds. New cuttings of all kinds are firmly quoted, with No. 1 white shirt cuttings held for 10.50 cents per pound and higher.

PAPER STOCK.—Demand for old paper also has sagged to an extent during the past few days, and prices on some grades have eased off slightly, but the equilibrium of the market is well maintained and packers are not rushing to sell goods. On the contrary, most dealers claim to have but light holdings, and are waiting for demand to pick up. Prices named by leading New York concerns range about as follows on the principal grades, f.o.b. this city: No. 1 hard white shavings, 3.90 cents a pound; No. 1 soft white shavings, 3.50 cents; ledger stock, 1.75 cents; heavy books and magazines, 1.55 cents; old No. 1 manilas, 1.10 cents; overissue newspapers, 90 cents a hundred pounds; folded news, 70 cents, and mixed paper, 55 cents.

OLD ROPE AND BAGGING.—Old manila rope is moving freely at a price basis of close to 4.75 cents a pound at dealers' shipping points. Old bagging is firming in tone and is now bringing 90 cents to $1 per hundred pounds for No. 1 scrap bagging, and around 75 cents a hundred for roofing bagging.

DIRECTION OF FIBERS AFFECTS STRENGTH OF FIBER BOXES.

The direction in which the fibers run in fiber-board boxes has been found to have considerable effect upon the serviceability of the boxes. Fiber board does not tear as easily across the grain as with the grain; it may have two or three times as much strength in one direction as in the other, the difference varying with manufacturing conditions. This excess strength may be advantageously used to reinforce the weakest points of the box and so produce a better balanced construction.

The weakest parts of fiber boxes are the scores, or folds forming the edges of the box. It is impossible to have the fibers running perpendicular to every score, but usually they might be made to run perpendicular to the scores which receive the hardest punishment, or which tend to break open first. The location of the scores most liable to failure, of course, varies with the shape of the box and the nature of the contents, and can best be determined by test. The following comments and deductions are for boxes whose depth is less than their width.

In tests at the U.S. Forest Products Laboratory, on fiber boxes, some packed with two dozen No. 2 food cans, and some with four dozen tall-sized milk cans, it was found that the first break nearly always occurred in the horizontal end scores. By making up the boxes so that the fibers ran vertically instead of horizontally in the sides and ends, the first break throughout the length of a horizontal end score was retarded about 85 per cent. Through the same change, the horizontal side scores, which received the next hardest punishment, were strengthened so that the first break never occurred in them.

The gain in strength of the horizontal scores was, of course, accompanied by a weakening of the vertical scores. But since the upright scores do not ordinarily receive as great stress as the horizontal scores, and in these perpendicular tests were not as likely to come in contact with the sharp edges of the cans, they were able to stand a reduction in strength and yet not become the point of first failure.

PINE STAND GROWS 1000 FEET A YEAR.

Two acres of white pine, near Keene, N. H., were sold three or four years ago, before the war prices, for $2,000 on the stump. The total stand was 254 cords, which equals 170,000 board feet, or an average of 85,000 feet per acre. The trees were from 80 to 85 years old; so the per annum growth on each acre was about 1,000 feet and the gross returns about $12.00 per acre per annum.

Scandinavian American Trading Co.

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NEW YORK

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Write us and be Convinced.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

IN FLANDERS' FIELDS.

In Flanders' fields, the poppies blow
Between the crosses, row on row
That mark our place; and in the sky
The larks, still bravely singing, fly,
Scarce heard amid the guns below.
We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders' fields.
Take up our quarrel with the foe!
To you, from failing hands, we throw
The torch. Be yours to lift it high!
If ye break faith with us who die
We shall not sleep, though poppies blow
In Flanders' fields.

LT.-COL. JOHN McCRAE.

France, 1917.

NOVEMBER ELEVENTH.

Remember the sacrifices that made Peace possible. Pray for the conference that can make Peace permanent.

GET THE CLASSES GOING.

There seems to be a tendency for pulp and paper mill communities to delay the organization of classes until the whole text book, or, at least, the third volume is available. This is a mistake. The men who need the course most are not the men who are ready to begin their study with the actual manufacturing operations, but those who have not had the educational foundation for the logical analysis of a manufacturing problem on the only sound basis of scientific principles and with mathematical, accurate calculation. The two volumes now on sale provide the necessary material for such instruction. And right here a word might be said regarding the character of this material.

The Textbook Committee realised that many of the men who need and want this elementary instruction require careful explanation of apparently unimportant steps in the reasoning which seem a bit childish to a college graduate. It is these obscure steps that so often prove stumbling blocks to the student, and give the teacher a chance to be of service. Furthermore, it was necessary, while preparing the texts, to make them so clear that the man studying at home, without a teacher, can follow and understand the subject by applying himself to the task. Consequently, the Committee engaged the services of a man who, having spent years in the preparation and presentation of material for correspondence instruction to assist in editing the textbooks.

Another feature that had to be provided for is the use of the books for reference purposes. This makes necessary the inclusion of some material that is not strictly of every day use, but which, to be available, should properly be included with the elementary subjects.

The two volumes now complete contain the following subjects: Arithmetic, Elementary Applied Mathematics, How to Read Drawings, Elements of Physics, Elements of Mechanics and Hydraulics, Elementary Electricity and Elements of Chemistry. These books are ready, why not use them?

Winter is coming on, and the long evenings can not be more profitably spent than in study. There are surely from ten to thirty or forty men in every mill towns who could profit by a systematic study of these books. They should be studied systematically, progressing from subject to subject, as progress is made in school. In fact it is school to those who have been excluded from previous educational opportunities. It should be some one's happy duty in each mill to organize such classes and lend a word of encouragement and advice as studies progress.

The complete course in mathematics will probably take two years, giving two evenings a week. Many mill- and laboratory men can doubtless pass a fair examination on the section on Arithmetic and could at once begin in a more advanced class in the Applied Mathematics (mensuration, etc.) In parallel with either, the section How to Read Drawings can be taken up. For those who have completed the Applied Mathematics, or can pass an examination after reviewing it, the section of Physics can be studied. Possibly this could be started in parallel with the second half of the Applications, depending on how much time the men will put on the work at home.

Once these subjects in volume 1 are mastered, the work in volume 2 will go more easily, partly because of the knowledge obtained, but largely from the attitude and habit of study. In fact, this is really the most important benefit of studying—the ability to concentrate mental effort. The men who get ahead are the men who think. It is better to be able to think straight than to know. One can only know from his own or another's experience; a new situation or problem requires thinking, as does progress. But the ability to think requires the study of what is known.

The best that is known about pulp and paper manufacture is embodied—not embalmed—in these books. It is live, friendly, useful material. It breathes of human experience and leads to wider service through the most wonderful product that man has invented. Surely the study of such is worth while. The treatment is purposely broad. To limit it to a mere description of movements or specification of apparatus would be to make the student a mere machine. The object of the Committee is to make the readers and students broader, better, men.

SCIENCE AT WORK.

The people of Canada may well learn a lesson on the subject of what organized science can do for an industry by pondering the following quotation of Mr. Sidney D. Wells regarding the work of the Forest Products Laboratory at Madison, Wis. Mr. Wells has, himself, made a number of important contributions to our knowledge of pulp and paper making materials and processes. Canada is relatively much more dependent than is the United States on the wood using industries for the country's prosperity and the continued employment of the population. The work in forest products can, however, be largely paralleled by research in connection with minerals, fisheries, agriculture and such industries as are not based on indigenous raw materials, but which must necessarily be maintained in an efficient state of productivity in order that a balance of opportunities for employment of our whole population be afforded, and in order that local requirements shall not be entirely dependent on imported goods.

''The Forest Products Laboratory is at Madison,'' said Mr. Wells, speaking before the North-Western Section of the American Pulp and Paper Mill Superintendents' Association, ''to serve your needs and as the margin between the cost of raw material and price of finished product becomes narrower the only alternative is to produce more product with the same or smaller amounts of raw material. This will involve painstaking work in studying where losses occur and how they may be avoided, and the superintendent with the responsibility of maximum production and the highest quality consistent therewith cannot devote his attention to these details without the danger of curtailment of production.

''The logical method of doing this is by delegating it to an organization such as ours whose object is to perform this particular function. An example of some work we have done along this line is the studies on the cause and prevention of decay in wood and pulp which was started through Dr. Kress's efforts, carried on with the support of the paper manufacturers, and encouraged by your sympathy. The work has led to what we believe are some very effective methods for reducing the loss. Another study much less in magnitude but of considerable interest and importance is that of the losses on the paper machine. I recently had an opportunity of studying such losses on one of the book and news machines of a mill in a neighboring state. In times past if 30 per cent of the material added to the beater ran down the river it did not cause very much worry because pulp was cheap. In fact, few attempts were made to ascertain where the loss occurred or what it was. The situation is now considerably different and the manager of the mill referred to wanted to know. I was there two weeks and measured the volume of water being wasted from the paper machine, the amount of fiber, clay, and soluble material therein and such other points as were related to the problem throughout a period of eight operating days. The figures obtained were very interesting and I shall give them briefly:

			To sewer		Unaccounted
Fiber	tons	In paper	Insol.	Sol.	for
Sulphite	45				
Book Stock	41				
Shavings	18½				
Groundwood	200				
		tons	tons	tons	tons
	304½	254	38½	6	6
Clay	41	27	14	..	..
Alum size silicate ..	10¼	4	½	7	1
	356	285	53	13	7

''It was found that even the fact that measurements were being made seemed to reduce the amount of loss and as a result of the study changes are being made which will effect very material savings. As I have intimated, the first step towards reduction of loss is to find out where it is and how much. It is then easy to convince those directly in charge of operation and also the powers that be that possible inconvenience and a certain amount of expense is worth while.

''I have given a couple of instances to illustrate how our laboratory can serve and could give you many more. We are glad of the opportunity to serve wherever possible and also welcome and need your advice to keep us informed of the most vital problems and the benefits of your experience that we may always work within the realms of practicability. I trust we can continue to count on your co-operation with which I am sure we can render a great service.''

Canada has a similar institution. It can best serve by having continued interest on the part of wood using industries, and adequate support from the Government.

COBWEBS.

There is a good suggestion in the notes from our London correspondent to the effect that the Pulp and Paper Association should make a collection of literature and specimens of historic and scientific interest to the Canadian industry. There is an excellent collection of specimens at the Forest Products Laboratories in Montreal. In large part this has been made possible by the cooperation of the Association and the various mills. More could be done, no doubt, in regard to the literature and the Association could well assist such a movement.

No one can make a fool of you unless you supply the material.

A particularly good workman always seems to have a particularly good job.

''The best time to hold on is when you reach the point where the average fellow would quit.''

Oat Hulls for Straw Board and Paper Pulp

By S. D. Wells[*], Engineer in Forest Products, Forest Products Laboratory, Madison, Wis.

Introduction.

In the preparation of oats for oat meal, rolled oats, and other cereal products it is necessary to remove the outer shell or hull. The meat or groat of the oat is then carried on to the next step but the hull is largely a waste product and it has only been found possible to utilize but a small part of the quantity available as roughage in prepared feeds and similar products. Large amounts have been used for fuel with rather unsatisfactory results. The tonnage of oat hulls that must be disposed of is considerable and has been estimated by persons acquainted with the situation to amount to over 1500 tons daily. Of this amount certain mills contribute a very large portion amounting in certain instances to over 200 tons daily. In considering means for the utilization of this material the paper industry offers a most promising outlet, especially when it is considered that the problem of collection has already been taken care of by the miller, and the Forest Products Laboratory undertook a series of paper making studies on the material early in the year with the financial assistance of the Quaker Oats Company.

Raw Materials.

The material worked on consisted of the oat hulls removed from the groat by a special milling process which has practically no grinding action. Some were obtained without any additional treatment while a portion of the material was screened to remove dust, particles of the fine filaments from the groat, and other material obtained in the process. Screening the material is advisable on account of the food value of the fine material removed, its utter worthlessness for paper making purposes, and the trouble occasioned in washing the cooked hulls later on in the process if much fine material is present. Ground oat hulls were also tried but found to be entirely unsuitable on account of the difficulty of obtaining uniform circulation of the cooking liquors during digestion and in the subsequent washing of the pulp.

Cooking Tests.

Rotary autoclaves heated with burners were used in the preliminary cooks. The larger cooks, however, were made in the tumbling digester used for alkaline cooks which has a capacity of from 75 lbs to 100 lbs. of oat hulls. The following cooking processes or liquors were used:

Lime	(60% CaO—40% MgO).
Lime	(over 95% CoO)
Lime—sulphur	
"Sulphate" (Caustic soda and sodium sulphide).	

Local Wisconsin lime was used for the first series of lime cooks comprising cooks 1, 2, 4, 5, 6, 7, 8, 9, 10 and 11. This lime is "Dolomitic" in character and contained two parts of magnesium oxide for every three parts of calcium oxide. The magnesium oxide present was believed to be inert and a high calcium chemical lime, such as is used in causticizing and cooking rags or straw was used for cooks 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25 and 26. This lime tested over 98 per cent CaO and was found to be from 20 to 30 per cent more active than the Wisconsin lime.

The lime sulphur cook was suggested by the Drewsen patents and was made by using a mixture of quick lime and sulphur. The results were very unsatisfactory and the work was confined to one autoclave cook.

The sulphate process was tried in making cooks 3, 14, 17, 24 and 27, in which a total of 12 per cent of caustic soda and sodium sulphide per 100 pounds of hulls was found to be sufficient to reduce the material to a bleached pulp. The fibres were extremely fine and short and great difficulty was experienced in washing the pulp on account of its slimey water-holding qualities. After the alkali was washed out, however, it resembled the imported straw pulps and could be used for the same purposes.

Cook 17 was tried to determine the character of the pulp obtained under mild cooking conditions. A high yield of 55 per cent was obtained but the pulp was unevenly cooked and unsuitable for bleaching. Difficulty was also experienced in washing. Two cooks were made in which the straw was mixed with cotton linters with the object of counteracting the extreme softness and fluffiness of cotton linters with the hard dense nature of the straw pulp. Cook 24 was made using 46 pounds of oat hulls and 31.9 pounds of second cut cotton linters and a yield of 63 per cent was obtained. The grade of cotton linters used would give a yield of about 80 per cent under the cooking conditions leaving a yield of 51 per cent for the oat hulls. Cook 27 was made using 74 pounds of oat hulls and 27.5 pounds of cotton hull fibre obtained by the Segundo process of delinting the cotton seed. A yield of 58.3 per cent was obtained. Segundo fibre cooked under the conditions would give a yield of 75 per cent leaving a yield of 52 per cent for the oat hulls. The products obtained bleached very readily. Eight per cent of bleaching powder was used to bleach cook 24 and 5 per cent with cook 27. The softness of the cotton fibre in the mixture made it possible to wash without difficulty and it seems probable that an outlet for the material might be found in the manufacture of book, magazine and similar papers. The cooking conditions in greater detail are given in Table I.

Paper Making Tests.

The material obtained from the various cooks was washed and beaten to what was thought to be the proper amount and then run over the combination cylinder-fourdrinier paper machine. The furnishes of the various runs are indicated in Table II. In general the lime cooks were washed one hour in the beaters and then brushed lightly for a second hour. When run over the paper machine the stock was passed through a Jordan which gave it a stiff brushing and by varying the degree to which the plug was screwed a considerable variation in the fineness of the stock was obtained. In the runs in which the cylinder machine was used it was found that the stock tended to settle in the bottom of the cylinder vat. This trouble was remedied, however, by placing a small shower pipe in the vat and with a small amount of water sufficient agitation was secured to prevent settling. Cooks 6 to 22 were run over the cylinder portion of the paper machine while cooks 23 to to 26, inclusive, were run over the Fourdrinier por-

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[*] A comprehensive discussion on the Structure of Cereal Straws, by Prof, F. E. Lloyd, began in the Pulp & Paper Magazine, Sept. 15, 1921. Reprints are 25 cents each.

TABLE I.

Cook No.	Fibrous material charged (B.D.W.)			Chemical used per 100 lbs. material			Volume cooking liquor per 100 lbs.	Alkali consumed ratio of combined to total	Temperature	Maximum steam pressure	Pressure attainment period	Maximum pressure maintained	Yield.
	Oat hulls	Straw	Cotton linters	Lime	NaOH	Na_2S							
	Pounds	Pounds	Pounds	Lbs.	Lbs.	Lbs.	Gals.	%	°C	#/sq.in	Minutes	Minutes	%
3	[illegible]	--	--	--	9.2	10.9	40	--	[illegible]	75	120	145	25
[illegible]	75.0	--	--	--	11.25	3.75	58	--	144	44	90	300	--
17	76.0	--	--	--	8.9	2.96	50	[illegible]	135	31	120	300	[illegible]
24	46.0	--	31.9	--	9.0	3.0	50	[illegible]	[illegible]	31	105	390	63.0
27	74.0	--	27.5	--	9.0	3.0	30	86.7	140	38	500	1035	58.3
2	2.35	--	--	16.0	CaO 60% MgO 40%	Sulphur 31.9	48.8	--	150	54	210	210	53.6
1	2.63			15.0	"	--	47.5	--	150	54	195	240	53.7
4	2.00			15.0	"	--	53.4	--	135	31	120	135	[illegible]
5	2.00			15.0	"	--	[illegible]	--	134	29	135	120	
6	84.0			15.0	"	--	50.0	--	136	32	120	225	
7	81.5			15.0	"	--	50.	--	135	31	90	315	
8	86.2	Ground hulls		15.0	"	--	50.	--	135	31	120	330	
9	79.0			15.0	"	--	50	--	136	32	90	360	
10	80.0			12.8	"	--	50	--	135	31	60	360	
11	77.5			10.0	"	--	50	--	135	31	90	420	
12	82.5			10.5	High calcium line		50	--	135	31	60	420	
13	79.0			7.5	" "	"	50	--	135	31	45	420	
15	75.3			12.5	" "	"	50.3	--	136	32	70	460	
16	76.0	Screened hulls		12.5	" "	"	50	--	138	35	45	480	
18	67.4			12.5	" "	"	50	--	135	31	120	480	
19	75.0			10.6	" "	"	50	--	135	31	120	480	
20	47.0			10.6	" "	"	50	--	135	31	120	480	
21	64.0			12.5	" "	"	50	--	160	75	105	240	
22	70.0			12.5	" "	"	50	--	118	12	120	144	
23	69.0		5.0	12.5	" "	"	50	--	135	31	120	460	
25	15.4		2.6	11.8	" "	"	48	--	135	31	120	480	
26	78.4		6.3	11.6	" "	"	50	--	136	32	150	480	

Note: Beginning with Cook No. 12, yields were not determined on account of presence of considerable lime residue in pulp from blow pit. Indications point to 70 per cent as a fair average.

tion. Considerable difficulty was experienced in running the sheet on account of the fact that the machine was not equipped to run straw board and it was found necessary to add 10 per cent of sulphate or kraft pulp to the furnish to be able to run over the machine. Cooks 7, 8, 9, 10, 11, 12, 13, 15, 16 and 21, were run with 10 per cent kraft pulp. In the cook 20 old newspapers were used instead of kraft and in the same proportion. The sheet, however, was unsatisfatcory. In cooks 18, 19 and 22, 10 per cent raw second cut cotton linters were used with promising results and in cooks 23, 25 and 26, 7 per cent second cut cotton linters were mixed with the hulls before cooking and given the same treatment with the result that the linters were hardened and a stronger sheet was obtained than with the raw linters. The appearance of the sheets obtained are indicated in Table II in the column headed "Condition of Sheet."

Strength Tests.

Strength tests on the more promising sheets obtained are given in Table III. The results obtained indicate that the greatest factor to be considered in utilizing oat hulls for board is the beater treatment. The optimum cooking conditions seems to be between 11.6 and 12.5 per cent of CaO with a temperature of not over 136 degrees C for at least six hours. There were numerous cooks made under these conditions, however, which were weak and unsatisfactory on account of unfavorable beater treatment.

The run made from cooks 25 and 26 showed the maximum strength. The furnish of this run when analyzed consisted of 65 per cent oat hull pulp, 25 rye straw pulp and 10 per cent cotton linter pulp. The straw blended well with the oat hulls and seemed to give results superior to what can be obtained from either adone.

Corrugating Tests.

The sheets obtained in the trial runs indicated that satisfactory results could be expected in using oat hulls to replace straw either partially or wholly in the manufacture of straw board. Samples were corrugated by the Mid-West Box Company and the American Can Company and while they did not possess all the stiffness of the regular stock the conditions under which they were run through the corrugating machines was not equally advantageous and the opinion seemed to be general that it was only a matter of adjusting a few

TABLE II.

Cook No.	Stock from digester.			Stock added.				Condition of beaten stock	Condition of sheet
	Oat hull	Rye Straw	Cotton linters	Kraft	Sulphite	Old paper	Raw cotton linter		
	%	%	%	%	%	%	%		
17	90	--	--	--	10	--	--	Slow	Shivey
24	48	--	52	--	--	--	--	Free	Slightly shivey - good color
27	65	--	35	--	--	--	--	Free	Slightly shivey - good color
7	90	--	--	10	--	--	--	Coarse - full of lime	
8	90	--	--	10	--	--	--	Very Coarse	Foam marks
9	90	--	--	10	--	--	--	Fine	Foam marks
10	90	--	--	10	--	--	--	Medium	Foam marks - crushing
11	90	--	--	10	--	--	--	Coarse	Foam marks - wild
12	90	--	--	10	--	--	--	Fine	Crushing
13	90	--	--	10	--	—	--	Fine	Slightly crushing
15	90	--	--	10	--	--	--	Fine	" "
16	90	--	--	10	--	--	--	Medium	Slightly crushing
18	9	--	--	--	--	--	10	Fine	Crushing
19	9	--	--	--	--	--	10	"	"
20	90	--	--	--	--	10	--	Very coarse	Foam spots
21	[illegible]	--	--	10	--	--	--	Coarse	Foam marks
22	90	--	--	--	--	--	1	Very fine	Crushing
23	92	--	8	--	--	--	--	Fine	Good formation
25 & 26	66	25	9	--	--	--	--	Medium	Only passable formation
[illegible]	91.5	--	8.5	--	--	--	--	Coarse	" " "

TABLE III.

Furnish		Weight per ream 500 sheets 24"x36"	Thickness	Weight per cubic foot	Mullen test	Mullen test divided by ream weight	Schopper tests						Folding tests		
							Breaking length			Stretch					
Cooked No.	Pulp used						In machine direction	Across machine direction	Average	In machine direction	Across machine direction	Stretch average	In machine direction	Across machine direction	Average
		Pounds	Inches	Pounds	#/sq.in.		Meters	Meters	Meters	%	%	%	%	%	%
17	10% sulphite	110	.0111	39.6	27.3	.249	3020	1580	2285	1.5	2.2	1.8	2.8	1.8	2.5
24	--	48	.0036	54.0	17.5	.360	3240	2170	2705	2.4	6.1	4.2	35.4	27.0	31.2
24	- -	37	.0029	51.5	17.3	.467	4140	2410	327	2.3	3.5	2.9	57.6	25.6	41.4
7	10% kraft	108	.0100	43.2	12.3	.114	1415	750	1088	0.6	0.8	0.7	1.0	1.0	1.0
9	"	110	.0134	32.9	14.3	.131	1535	854	1195	0.9	1.2	1.1	1.8	1.0	1.4
10	"	147	.0164	35.8	17.7	.120	1075	900	988	0.8	1.4	1.1	1.6	1.2	1.4
11	"	118	.0138	34.2	9.9	.084	808	466	637	0.9	1.0	1.0	2.4	1.6	2.0
12	"	131	.0148	35.4	11.3	.086	1141	540	841	0.8	1.2	1.1	2.0	1.4	1.7
13	"	161	.0164	36.8	13.5	.089	1262	610	936	1.1	1.5	1.3	1.2	1.0	1.1
15	"	117	.0144	32.5	10.0	.087	870	574	72	0.5	1.2	0.8	1.0	1.0	1.0
16	"	159	.0151	42.1	15.9	.100	902	586	744	1.0	1.5	1.3	3.6	1.2	2.4
18	10% linters	110	.0103	42.7	9.9	.090	508	598	553	1.1	1.2	1.2	1.0	1.0	1.0
19	"	119	.0119	40.0	11.4	.096	850	492	671	0.9	0.9	0.9	2.0	1.4	1.7
21	10% kraft	114	.0120	38.	10.1	.089	1085	472	779	0.8	1.1	1.0	1.6	1.0	1.3
22	10% linters	159	.0138	46.0	15.6	.098	1010	568	789	1.0	1.0	1.0	3.0	1.6	2.3
23	—	118	.0145	32.6	14.8	.125	1335	782	1058	1.2	1.4	1.3	2.4	2.0	2.2
25 & 26	--	82	.0099	33.2	12.7	.155	1535	960	1250	1.7	2.1	1.9	2.0	1.4	1.7
26	—	135	.0144	37.5	11.9	.088	920	660	790	1.0	1.1	1.1	1.0	1.0	1.0
27	--	40	.0040	39.7	11.5	.288	2440	1370	1905	2.4	2.2	2.3	11.6	4.0	7.8

details in the manufacture of the material to give satisfactory results. Samples were also lined with sulphite paper and tried for cap stock at the Cedar Rapids plant of the Quaker Oats Company with very satisfactory results as to strength and grip on shrinking on to the tubular fibre containers.

Mill Runs.

In view of the results of the laboratory runs it was decided to make a trial of oat hulls at the strawboard mill of the Quaker Oats Company at Pekin, Illinois, and about 30 tons were run into boards of various types the week of June 15 and 18, 1921.

The mill is equipped with several spherical rotary boilers 14 feet in diameter, hollander type beating engines with drum washers, Jordan refining engines capable of being used either in tandem or parallel, and a 68 inch four cylinder board machine with forty dryers fitted with a hot air drying system.

Cooking Treatment.

The hulls were given the same cooking treatment used on the straw which was as follows

Lime per 100 lbs. bone dry hulls (Testing 99% CaO)	15.4 lbs.
Volume of cooking liquor at start per 100 lbs. dry hulls	24 gallons

The rotaries were loaded in the forenoon and heated with exhaust steam indicating 11 pounds per square inch until 3:00 o'clock in the afternoon when the exhaust steam was shut off and live steam turned on and, by means of a regulator, a pressure at the rotaries of 21 pounds per square inch was maintained. These conditions were maintained until 6:00 o'clock in the morning when the steam was shut off and the rotaries emptied as soon as space was provided for their contents some time in the forenoon.

The rotaries held a charge of 6-½ tons of straw but it was found that from 10 to 20 per cent more oat hulls could be charged and a charge of a mixture of 6860 pounds of air dry straw and 8800 pounds of air dry oat hulls was charged without over-loading. With straw it is necessary to rotate the boiler to pack the straw and take off the cover and recharge three or four times to make a complete charge while with oat hulls it could all be loaded with one filling and with oat hull straw mixtures only one refilling was necessary. Two rotaries of oat hulls, four rotaries of oat hull straw mixtures, and one rotary of 15,100 pounds of oat hulls and and 1000 pounds of second cut cotton linters air dry weight were cooked.

Washing Treatment.

The cooked oat hulls and oat hull and straw mixtures were allowed to stand in a pile as long as possible but on account of lack of time the average time in the pile was not more than 24 hours. They were then given a washing treatment of 3-½ hours at the end of which period the lime residues were practically removed. During the washing the beater roll did not touch the bed plate but nevertheless the stock was reduced to a considerable extent. One interesting feature was the fact that oat hull stock swells under the treatment while with straw stock there is a decrease in volume.

Paper Machine Trials.

The following runs were made on the paper machine:

1. Single manila lined strawboard.
   50% straw—50% oat hull.
2. Double manila lined strawboard.
   50% straw—50% oat hull.
3. Double manila lined strawboard.
   100% oat hull.
4. Egg case board.
   100% oat hull.
5. Egg case board.
   50% straw—50% oat hull.

Run No. 1 Single Manila Lined Strawboard.

In running from the straw furnish to the 50 per cent straw and 50 per cent oat hull furnish on single manila lined strawboard the only difficulty experienced was the greater ease with which the oat hull stock dried on account of the larger proportion of water removed by the presses. The change necessitated the altering of the steam pressure in the dryers and until it was properly adjusted considerable broke was made. After running several hours it was also observed that the oat hull stock was heavier and settled to a slight extent in the cylinder vats. This trouble did not prevent the run, however, and since connections were provided in the vats for water jets it would not be difficult to equip the machine for the new stock.

On the calenders the new furnish was found to take a very satisfactory finish and with water boxes on the calenders the appearance of the sheet was equal to the straight straw sheet usually run.

Run No. 2 Double Manila Lined Strawboard.

The change from single manila lined to double manila lined strawboard using 50 per cent straw and 50 per cent oat hull in each case was made without any trouble or break. In the double lined board the finish obtained does not reflect the stock since it is taken entirely by the liner and the internal layers of straw and oat hull stock are not directly responsible. The product, however, was quite satisfactory as to finish, strength, adhesion of the layers, and stiffness.

Run No. 3 Double Manila Lined Strawboard—100 Per Cent Oat Hull.

In trying a furnish of 100 per cent oat hull which followed a run of straw egg case board trouble was experienced in adjusting the machine and by the time the sheet was running satisfactorily crushing occurred and the run was abandoned. The crushing was caused by the liner being too slow for stock such as oat hull which gives up its water readily on the presses. Unfortunately, during the night a considerable proportion of parchmentized paper scrap was used in the furnish of the liner which caused it to be slower than customary. Portions of the scrap also failed to be reduced in the beaters which caused spots in the sheet. While it was not possible with the amount of stock prepared to make paper to fill orders very satisfactory samples were obtained which are attached at the end of this report.

Run No. 4 Egg Case—100 Per Cent Oat Hull.

In run No. 4, egg straw board was made out of oat hull stock with certain proportions of cotton linter stock which could not be determined. Only 6-½ per cent was used in the rotary charge and a large proportion of the linters from the rotary was mixed with other rotary charges so it is doubtful whether there was more than 4 per cent of linter fibre in the furnish. The same trouble experienced in run No. 1 on account of over-drying was met and after the dryers were adjusted it was found that running at the rate of 23 tons per day, 7 pounds of steam was sufficient without using any hot air. A larger proportion of the moisture is pressed out of the oat hull stock by the presses than from straw and the capacity of a given set of dryers would be from ten to twenty per cent greater, an important consideration for mills with insufficient dryer capacity.

Run No. 5 Egg Case—50% Oat Hull—50% Straw.

There was no trouble in runing on to a 50 per cent straw furnish and the board obtained, as would be expected, showed less of the oat hull characteristics and more of the straw.

Mullen weight and thickness tests are given in Table IV. Run No. 1 was water finished and a very dense sheet was obtained with a relatively high pop test. Run No. 2 also gave a high pop test but run No. 3 was decidedly weaker.

TABLE IV.

Run No.	Furnish		Product	Calendered	Wgt. per ream 500 sheets 24x36	Thickness	Wgt. per cubic ft.	Mullen test		Tearing test or toughness		
	Oat hulls	Straw						On sheet	P per lb. per ream	In machine direction	Across machine direction	Average
	%	%			Lbs.	In.	Lbs.	#/sq. in.	#/sq. in.	Gms	Gms.	Gms
1	50	50	Single Manila lined	Yes	316	.024	52.6	71.4	.226	--	--	--
2	50	50	Double Manila lined	Yes	358	.033	43.6	76.4	.214	--	--	--
3	100	--	Double Manila lined	No	316	.037	34.0	51.0	.161	--	--	--
4	100	--	Egg case	Yes	400	.035	46.7	46.4	.116	800	422	611
	100	--	" "	No	405	.039	42.1	46.2	.114	--	--	--
5	50	50	" "	Yes	374	.031	48.6	67.2	.180	896	519	707
Stock	--	100	" "	Yes	282	.026	44.2	71.2	.253	848	528	688

The egg case board run No. 4, in which 100 per cent oat hulls were used is also much weaker than run No. 5 where equal parts of oat hulls and straw were used. The weight of the papers per cubic foot indicate that oat hull papers can be compressed by calendering and weigh about the same as the straight straw board.

Summary.

The results of the semi-commercial and mill runs on oat hulls indicate that they are capable of utilization in the manufacture of board using digestion with lime in the same manner that straw is treated. The yields obtained and character of the stock indicate that the cost of converting oat hulls to board would not exceed the cost of converting straw and in the yard and rotary room labor savings of approximately 50 cents per ton of product are possible. Savings in steam required for drying are also possible. The bursting strength of sheets made from oat hulls is not as high as from straw board but very satisfactory results may be secured using oat hulls mixed with straw in equal proportions and tougher sheets than are possible from either oat hulls or straw are obtained by cooking small amount of cotton linters together with the hulls in the rotaries. Raw cotton linters are a very cheap source of fibre and grades not satisfactory for fine papers on account of dirt, although possessing excellent fibre, are entirely satisfactory and can be obtained at between $10 and $15 per ton, f.o.b. oil mills in the South. The possibilities of using even larger proportions of linters in the manufacture of other grades of papers than were used in the lime cooks of these experiments warrant investigation and in the opinion of the President of a large board manufacturing organization, who witnessed the mill trials, seem capable of considerable application.

The facility with which straw was replaced by oat hulls in the trials herein described would indicate that paper and board manufacturers using straw as a raw material could readily try out oat hulls in their plants under their particular conditions and ascertain the feasibility of the material for their particular products.

The runs on mixtures of oat hulls mixed with either cotton linters or cotton hull fibre using the sulphate process are very interesting and the excellent color of the pulps together with the high yields indicate that a promising source of pulp for the manufacture of book, high grade magazine, common writing and similar grades might be developed. The experiments indicate that a mill fitted with rotary boilers and washing and bleaching equipment could handle the stock and it is recommended that mill trials be arranged if possible.

The costs for making one ton of bleached pulp would appear to be as follows:

2220 pounds oat hulls at $6.00 per ton	$6.66
1110 " cotton linters at $20.00 per ton . .	11.10
530 " soda ash at $1.75 per hundred	9.28
280 " quick lime at $10.00 per ton	1.40
165 " sulphur at $20.00 per ton	1.65
100 " bleaching powder at $2.50 per 100	2.50
1 ton of coal at $5.00 per ton	5.00
Labor based on unskilled labor at $3.00 per 8 hr. day	7.50
Conversion	2.00
Overhead	2.50
Total	$49.59

These costs are based on the cost of a 30 ton plant which is capable of turning out bleached pulp in sheets of approximately 80 per cent moisture content with no recovery of the soda being about $300,000. Bleached soda pulp, which the pulp in question could replace, is quoted at present at $90 per ton, and with mounting wood costs, it seems doubtful whether it can ever be manufactured by present pulp mills for less than $70 per ton. Most of the work of the experiments described herein was devoted to the utilization of oats hulls by the strawboard industry since it was believed that it could be utilized there with the least change from present customs and habits. The promising margin of profit, however, allowed by the estimates of the cost of manufacturing bleached pulps from oat hulls and cotton linters by the sulphate process makes the desirability of mill trials particularly strong.

American Pulp and Paper Convention

By ROSCOE SMITH.

(Written specially for Pulp & Paper Magazine.)

Chicago, Nov. 5.—That part of the world concerning itself with the conversion of forests into wood pulp and in the manufacturing and distribution of paper made largely from the product of the forests turned its eyes toward Chicago last week where the men most prominent in this important and essential paper industry gathered to hold a series of conferences promising many good things for the future of the industry.

Technically the meeting was held under the auspices of the American Pulp and Paper Association with its allied and subsidiary organizations joining in what is termed the Fall Business Convention, and the scene was laid in the new Drake Hotel, though some of the association conferences were held at the Blackstone Hotel.

Danger in low foreign prices, cheap labor in Europe and depreciated exchange were regarded as a serious menace to the American paper industry and shipping and manufacturing costs was the main topic Tuesday morning when the Salesmen's Association met to discuss these all-important subjects. Two thirds of the news print used in the United States was made last year from wood grown on foreign soil. Out of more than 4,500,000 tons of wood pulp consumed for all purposes 35 percent came from foreign markets. Over $191,000,000 was paid for the pulpwood, wood pulp and paper imported. Judging from these figures disclosed at the conference, it is easily understood to what extent America has become dependent on outside markets beyond its control. The United States no longer can rely on its eastern forest lands because of their depletion, for an adequate supply of pulpwood the cost for this reason having risen over 110 percent in the five year period 1916-1920 and of wood pulp 35 percent.

Two notable statements were made at the Salesmen's Association Conference, the first business session scheduled, during a discussion on paper imports.

"It costs $2 less to ship a ton of newsprint paper from Germany to New York City than to ship a ton of the same paper from Niagara Falls across the state of New York," said Secretary Kellogg, of the News Print Service Bureau. Continuing his discussion of vital statistics Mr. Kellogg gave figures showing comparative freight rates between foreign shipping points and American points, as evidence of the serious conditions confronting the paper industry in general.

"America's paper industry faces serious competition of paper importations from foreign lands not alone because of the fact that foreign paper is made by cheap labor, under depreciated exchange conditions, but also because of the cost of freight shipments.

A number of comparative rates were quoted last week.

"It is better for the American user of newsprint to have a dependable source of supply at home at a price which affords a reasonable profit to the manufacturer and thus encourage greater production than to have a temporary supply from abroad at prices fixed by ruinous unfair competition, which will vanish when world conditions again approach normal."

The American Trade Association Executives Association was represented at the meeting by President Naylor who advocated open co-operation of the paper associations with the government and the public in general.

"I approve Mr. Hoover's suggestion of open information," said Mr. Naylor. "By reporting definite representative information to the government the association will be strengthened, and benefit will come not only to the industry, but to our national industrial stability through a frank understanding of facts. Elimination of mushroom, illegal trade associations is absolutely necessary not only for the good of the public, but also for our own profession as trade associations. I cannot resist suggesting that if the general facts of an industry are to be made public through a government agency that the government agency use the trade association which represents that industry as the source of correct information, otherwise there would have to be a board of experts at Washington for every industry to do the work in which the existing trade association is a specialist."

The second day was a day of action for the various associations, some of the meetings running parallel with others. An extended program of conferences opened with the Woodlands Section its members being in truth, the pioneers of the paper industry—the foresters. Heavy reductions in woods operations by the paper and pulp manufacturers were reported by Secretary O. M. Porter who gave the results of a survey of wood on hand and projected operations. There will be no shortage immediately of raw material, for the reports indicate there is still a large quantity of pulp wood in the hands of manufacturers even though this was put in at prices far above the presumptive cost of woods operations during the coming winter.

"Reports from 48 companies" said Secretary Porter, "are sufficiently distributed to provide probably an accurate estimate of the whole situation:

"The 1920 consumption of wood pulp by these mills was 1,855,005 cords and their stocks on hand September 1 was 2,292,483 cords. Pulp manufacturers usually carry two years stock of wood on hand, but this year are putting in only 792,630 cords. The small input this year, however, less than one half of last year's consumption, portends extremely low stocks in the Fall of 1922.

"These figures," said Secretary Porter in conclusion.

"reflect very clearly the present wood pulp market situation. American mills are overstocked with high priced wood and are curtailing their logging operations, in many cases from 50 to 70 percent of the 1920 operations. Of the 87 mills making reports, 27 reported they were making no contracts for any wood this winter."

The Waxed Paper Association are sponsors for the statement that buyers of fancy articles are buying once more. O. B. Towne, Secretary of the Waxed Paper, Vegetable parchment, Glassine and Greaseproof manufacturers association said that increasing orders for waxed and vegetable parchment paper sufficient to warrant a resumption of production by mills of this group, tell the story of how the business in fancy foods has turned the corner.

"These papers are used for the finest kinds of foodstuffs for the wrapping of fancy foods, the luxuries. This kind of business is the first to fall off when there is business depression. The return to normalcy tells a sure story that the buyers of fancy articles are buying once more. The mills have been running at a very small percentage of capacity but now business is warranting the enlargement of operations.

"A unique feature of this industry has been the growing demand for baker's bread, as indicated by sales of bread wrappers, forming an important part of the waxed paper industry. The bread wrapper business has held its own through the entire period of depression, a significant indication of the manner in which the public is buying baker's wrapped bread, instead of baking at home. The demand has also manifested itself in the extension of bread wrapping to bakeries which formerly shipped bread unwrapped. Confectioners are back in the market also for waxed paper for candies on a large scale."

That the speculative element in the handling of paper should be eliminated in the interest of the ultimate consumer, was the opinion of George W. Sisson, Jr., of Potsdam, N.Y. in discussing the present condition of the market for coarse papers, such as wrapping and other types. Mr. Sisson said that the business situation in this industry was now exactly where it was thirty months ago, when the cycle of business, starting with general inactivity, developed the prosperity felt in 1919 by the paper industry, as well as by business in general, and followed by depression and months of reduced production and a decreased volume of business.

"Two fundamental factors," said Mr. Sisson, "the general financial situation and the completion of the liquidation of stocks made when raw materials were at the highest point ever known, now favor a better period of business. It would seem from consideration of these matters to-day that the manufacturers of coarse papers can be careful by handling their business from now on in anticipation of a steady return to normal production, normal shipments, and normal profits. This will be more assured if those who merchandise our products realize that there should not be a speculative attitude in our relations, but that each should render service to the other on a fair basis of "pay for value received" to the end that the public whom we both finally serve, shall be supplied its needs at a fair cost, consistent with stability and continuity in the business of the merchant and manufacturer."

Perfect packages packed in paper formed one of the topics of the Gummed Paper manufacturers of the United States' meeting when the association announced that it would participate in November's observance of "perfect package month" as planned by the American Railway Association and the American Railway Express.

One hundered and forty tons of paper will be used in the "Prosperity Advertising Campaign" of the Rotary Clubs of America, according to Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, in an address delivered before the Chicago Rotary Club during the day's activities of the paper men. Dr. Baker is a member of the New York Rotary Club which has organized a national prosperity advertising campaign on bill boards, for nearly every part of which material and services have been contributed.

"Not alone was the paper contributed by manufacturers at less than cost," said Dr. Baker, "but the billboard owners have contributed advertising space and materials worth $1,500,000. The campaign will last three months and 5,000 pounds of ink will be used to put out nine slogans on 100,000 billboards in 8,000 cities, towns and villages. Lithographers here have given the small posters, printing has been done less than cost, and the entire campaign has been financed at a cost of $60,000, a large part of which is shipping advertising material."

Thursday's sessions were opened with an illuminating address on magazine publishing tonnage by Norman Wilson, of the Hammermill Company of Erie, Pa. While the tonnage has been severely affected by a decrease in advertising amounting to 37 percent less this year than in 1920, still this year's advertising is but 19 percent less than in 1919, while it is actually 10 percent higher than in 1918, according to Mr. Wilson in his report of the fine paper industry.

"The consumption of book paper may be measured to a large extent by the activities of the printing and the magazine publishing industries said Mr. Wilson, "and the consumption of cover and writing papers by the printing industry alone. Large advertising campaigns are laid out for next year and the printing industry is now running at approximately 84 percent. This is equal to if not in actual excess of the percentage that is being ordered from the paper mills, so that consumption is running ahead of orders.

"At the end of the first quarter of this year, the manufacturer of book, cover, tissue or writing paper was fortunate if he was able to operate to 50 percent of his capacity. The resumption of business however, in the third quarter brought up the average so that for the first nine months of this year production of fine papers was only 39 percent less than in 1920. The tissue paper industry was one of the first to recover from the severe depression and the demand is now better than normal. Orders for book cover and writing papers have taken a decided upturn in September and October."

The two concluding talks of the last day of the Paper men's meet were devoted to general topics relating to allied business and conditions underlying such industries. O. A. Miller, president of the Central Ohio Paper Co. of Columbus Ohio pleaded for maintenance of a high standard of ethics to the end that all may land safely on solid ground.

Mr. Miller said it was fine to see manufacturers and merchants coming together to consider what was best for all, that it was the manufacturers business to make paper and the merchant's sphere to sell it, and the closer the co-operation between the two the greater the degree of success to be attained.

President W. H. Finley of the Chicago and Northwestern Railroad said that expenses were ruining the railroads and that present operating costs menace transportation. The speaker advocated an equalization of values in wages and interest rates so the roads can be removed from their precarious situation.

Other speakers at the closing session were President Joseph H Defrees of the U.S. Chamber of Commerce who assailed high sur-taxes and tax-free investments voiced a plea for the rehabiliation of the farmer, who, he declared, was the worst hit of all classes as a result of depression in business; J. H. Stannard, of the Grand Lake Paper Company, New York City, Edward F. Herrlinger, Herrlinger Paper Co. of Cincinnati, and president of the National Paper Trade Association; and Thomas E. Donelly of Chicago also spoke briefly.

As a fitting finale of the papermen's conclave, motion pictures were shown of paper in the making from the forest to the consumer, and these pictures were viewed with great interest. The Rothacker Film Company told the delegates how film advertising was gradually teaching everybody the wonderful romances of trades hitherto a closed book to the world at large.

The meeting was marked by dinners, entertainments and sightseeing under the auspices of local organizations.

British Trade News

(From Our London Correspondent).

London, Oct. 21, 1921.

"The manufacture of newsprint in Canada from standing timber to finished sheet" is the title of a film now being shown to students of technical schools in papermaking round and about London. Messrs. Charles Walmsley & Co., the well known papermill engineers, kindly lend the film, which is shoun under the auspices of the Technical Section of the British Paper makers' Association. Messrs. John Dickinson & Co., Ltd., of the Croxley Paper mill are also displaying to their friends and customers a film illustrating the process of manufacture of some of their fine quality papers. As a side show they exhibit the raw materials used and a mill expert explains their application in the course of manufacturing paper. These films prove a great advertisement, but there is nothing yet produced to beat the Canadian film, which has more than astonished the general public, the majority having a slight conception of the great resources of the Dominion, or paper manufactured in it.

The Papermakers' Collection.

Canadians would do well to recognise the little scheme that Mr. A. W. Foster, B.A., the Secretary of British Papermakers' Association, has been conducting for some time past. He is collecting for the Association—for reference purposes as well as to preserve them for the use of future generations and the industry—old books, records, prints, curios, etc., dealing with and relating to paper manufacture. By this means he is gradually assembling a historical department, which at the moment is full of interest and valuable. Nearly all the books and records are presents from various mill owners and if Canadians have not already adopted a similar department it would be a wise move to start one for the sake of the history of pulp and paper manufacture. I am wondering how many in Canada today are in possession of the "Proposed Constitution" rules of the Canadian Pulp and Paper Association. Mr. A. G. McIntyre's name appears at the end of them as Secretary of Committee and the "proposed constitution" was subimtted by a Toronto meeting of pulp and paper makers, but the document is undated. I should say it was 8 or 9 years old; but old documents and old books should not be lost sight of, or the early files of "The Pulp and Paper Magazine," when it was pocket size, would also prove invaluable and a source of instruction.

Pulp Imports Down.

The imports of raw materials show a considerable decline in September, compared with August, and the total for the nine months, January to Sept. is only 466,423 tons, as againsts 981,334 tons for the corresponding period in 1920.

GROUNDWOOD.—Thanks to large shipments from Canada moist groundwood shipments to the United Kingdom exceeded those of August, but there is still considerably headway to be made to make up on the 1920 returns, as the following figures show:— From Sweden, 4,900 tons in Sept. (10,038 tons between Jan. and Sept., against 69,380 tons in 1920); Norway, 15,463 tons (135,768 tons 1921; 246,058 tons 1920); Canada, 21,116 tons—9,632 tons in Sept. 1920—(79,676 tons 1921; 56,825 tons 1920); other places 4,330 tons (10,672 tons 1921; 3,386 tons 1920). These figures are gratifying and encouraging to Dominion pulpmen. They show that while supplies have fallen off from foreign countries the British Dominion of Canada has increased shipments. Sweden's 4,900 tons in Sept. are valued at £42,657; Norway's 15,463 tons at £128,399; Canada's 21,116 tons at £321,557. A simple division calculation will give the shipping value per ton. Groundwood, 50 per cent. moist, can be bought in London at £4 a ton for prompt delivery.

UNBLEACHED CHEMICAL (Dry).—Total supplies 15,533 tons in Sept. and 54,967 tons in August; Jan.-Sept. 148,916 tons as against 389,032 tons in 1920. From Finland 918 tons in Sept. (4,482 tons Jan.-Sept. 1921; 34,067 tons 1920); Sweden, 11,238 tons (103,193 tons 1921; 243,284 tons 1920); Norway, 1,175 tons (27,591 tons 1921; 75,687 tons 1920); Germany, 78 tons (4,682 tons 1921; 5,556 tons 1920); Canada and other countries, 2,124 tons, (8,967 tons 1921; 30,438 tons 1920).

BLEACHED CHEMICAL (Dry).—Total shipments in Sept. 1,454 tons; August 1,475 tons. January-Sept. 10,697 tons against 21,945 tons in 1920. From Finland, 56 tons (107 tons Jan.-Sept. 1921; 1 ton 1920); Sweden, 961 tons (2,151 tons 1921; 3,450 tons 1920; Norway, 284 tons (7,251 tons 1921; 12,799 tons 1920); Germany, 4 tons (144 tons 1921; 505 tons 1920); Canada and other countries, 149 tons (1,044 tons 1921; 5,190 tons 1920).

CHEMICAL (Wet).—1,070 tons for January to Sept., against 9,520 tons for same period in 1920. No supplies were received in Sept.

ESPARTO.—Total supplies 9,999 tons in Sept, and 7,901 tons in August; Jan.-Sept. 59,031 tons against 130,854 tons in 1920.

Market quotations for chemical pulp in Canada at present are £19.15s to £20 for bleached sulphite; easy bleaching £14; sulphite newsprint (strong) £12½; unbleached soda (No. 1) £10½; soda kraft, £12 a ton. The market has a brighter outlook and an optimistic tone. Spanish Esparto is £6 10 a ton, other qualities £4.5s.

Exports of British Papers.

The imports of papers are considerably in excess of the exports of British manufactures. For the sake of comparison I give the figures from January-Sept. and included in the exports are envelopes, paper bags, playing cards, boxes and cartons.

	Imports cwts.	Exports cwts.
1921	4,536,087	1,069,440
1920.	10,609,512	1,590,281

These figures do not show a healthy sign for British mills. The principal exports in Sept. were:

PRINTING PAPER: To France, 1,062 cwts. (6,917 cwts. Jan.-Sept. 1921; 62,382 cwts. 1920); U. S. A. 391 cwts. (5,887 cwts. 1921); 5,039 cwts. 1920); other foreign places, 26,084 cwts. (114,592 cwts.; 194,985 cwts. in 1920); South Africa, 6,750 cwts. (57,755 cwts. 1921; 47,411 cwts.); India, 6,853 cwts. (74,165 cwts.; 190,688 cwts. in 1920; Strait Settlements, 1,165 cwts. (8,245 cwts. 1921; 9,751 cwts.) Ceylon, 2,304 cwts. (12,287 cwts; 15,272 cwts. in 1920; Australia, 25,015 cwts. (219,156 cwts. 1921; 86,308 cwts.); New Zealand, 5,507 cwts. (37,977 cwts.; 24,034 cwts. in 1920; Canada, 26 cwts.—61 cwts. in Sept. 1920—(1,881 cwts. in 1921; 1,180 cwts. 1920); Other places, 2,756 cwts. (26,461 cwts.; 42,800 cwts. in 1920). Total for Sept. 77,913 cwts.; August 40,861 cwts. (565,323 cwts. 1921; 679,841 cwts. 1920).

WRITING PAPER.—To France, 281 cwts. (1,593 cwts. 1921; 20,693 cwts. 1920); U. S. A., 32 cwts. (623 cwts. 1920); other foreign places 2,304 cwts. (18,462 cwts. 1921; 29,012 cwts.); South Africa, 1,429 cwts. (6,588 cwts. 1921; 5,614 cwts.); India, 5,163 cwts. (25,671 cwts.; 47,592 cwts in 1920); Straits Settlements, 62 cwts. (2,222 cwts. 1921; 3,901 cwts.); Ceylon, 27 cwts. (1,113 cwts. 1921; 3,002 cwts.); Australia 3,406 cwts. (26,210 cwts.; 31,675 cwts. in 1920); New Zealand, 887 cwts. (11,180 cwts. 1921; 9,315 cwts); Canada 50 cwts.—24 cwts. in Sept. 1920—(944 cwts; 435 cwts. in 1920); other places, 893 cwts (6,908 cwts. 1921; 9,511 cwts. 1920). Total—14,534 cwts in Sept.; August 8,224 cwts. (101,514 cwts. 1921—for 9 months— as against 161,191 cwts. in 1920).

Imports of Paper.

During August and September no newsprint supplies were received from Canada and the total for the nine months reaches only 5,203 cwts. compared with 146,328 cwts. in 1920. Newfoundland shipped 25,320 cwts. in Sept. bringing the total (for 1921) to date 435,470 cwts, as against 669,885 for 1920. The Dominion trade with United Kingdom in packing and wrapping papers increased in Sept to 1,530 cwts., compared with August's 302 cwts. and the total nine months supply now reaches 12,393 cwts. against 103,033 cwts. in 1920. Taken all round there are decreases in packings and wrappings from all countries. Sweden, one of the important suppliers dropping from 1,653,019 cwts. from Jan.-Sept. 1920 to 376,153 cwts. in 1921 for the corresponding period. Coated Papers are down to the smallest shipments—the supplies to rate being about one third of 1920 shipments.

Germany and Finland are still supplying the British paper market. Indeed, it is greatly to be feared that these countries have captured the market to the detriment of Canada and it would be interesting to know how things are working out in England, when the rate of exchange is considered, for German paper. Before the war the value of the mark was 20 to the British sovereign; today it takes 665-675 marks to make up the sovereign. We hear a great deal about the fall of the mark, but the Englishman will not tell us how he is faring on the sale of German paper and pulp in his market.

THE GERMANS DONT GET AWAY WITH IT.

Editor, Pulp and Paper Magazine.

The magazine of the 27th is to hand, and in the pulp and paper news, page 1103, the third item reads in part as follows:

> "Among the exhibits at the Convention of the U.T.A. which covered the entire mezzanine floor of the King Edward Hotel, Toronto, the one which attracted the most general interest was what is claimed to be the smallest paper-making machine in the world. The machine in question was made in Germany and was smuggled out of the country after the war. Lord Northcliffe wanted to buy it, and offered $25,000 for it, but the American Writing Paper Company of Holyoke, Mass. outbid him and secured it."

The writer saw this machine, and in conversation with one of the men in charge of the exhibit, asked if it were not one of the MARSHALL machines, having the impression that T. J. Marshall and Company had made several of them. He said to me, in effect, "This is The Marshall machine," and later explained how the wet end of it had been made by Marshall, and that Mr. Sindall or Mr. Bacon had become so interested in it that the dryer section, calenders and winder had later been added from their designs. I think it is no use allowing our German friends to get away with any more than their rightful credit in these matters, and the enterprise of Messrs. Marshall of London, England, should be recognized.

In a letter to the writer in discussing the question of papermaking school in 1910, Messrs. Marshall sent a specification of the machine with quotation. Among other things they say, "We are constantly exhibiting these machines all over this country, and we have one running for six months at the Angle-Japanese Exhibition this year for the Daily Mail newspaper and also one at the Pageant of Empire at the Crystal for the Daily Mail." As Messrs. Marshall then quoted one of these machines to the writer at 300 pounds, f.o.b., London, and as two of them were at that time being exhibited for the Daily Mail, Lord Northcliffe's paper, it is not very likely that he offered anything like $25,000 for the present machine.

Yours very truly, T. Linsey Crossley.

PRINCE GEORGE MILL TO BE LARGE.

The Directors of the Prince George pulp mill were in Victoria last month conferring with the government heads in respect to final arrangements for the erection of a mammoth plant at the Fraser River town.

When completed the Prince George mill will be one of the largest pulp plants on the continent, and the greatest in western Canada.

Seven million dollars will be invested in the undertaking while the size of the mill may be gauged from the fact that 10,000 horsepower will be used to operate the machinery. E. W. Bowness of Edmonton, is consulting engineer for the new power plant.

The Board of Directors of the Abitibi Power & Paper Co. were so pleased with their recent inspection of the plant and the town that a resolution of appreciation and congratulation was voted and sent to Manager McInnis.

Premier Drury was much impressed by his visit to Iroquois Falls. The folks took him in and gave him a good time, including a delightful theatrical entertainment by local talent.

A HANDY CHART FOR DETERMINING THE FLOW THROUGH PIPES.

By W. F. Schaphorst.

By simply laying a straight edge across the accompanyng chart any one of these questions may be answered.

1. How many cubic feet will flow through a pipe of known internal diameter at a given velocity?

2. How many gallons? other conditions being the same as in (1).

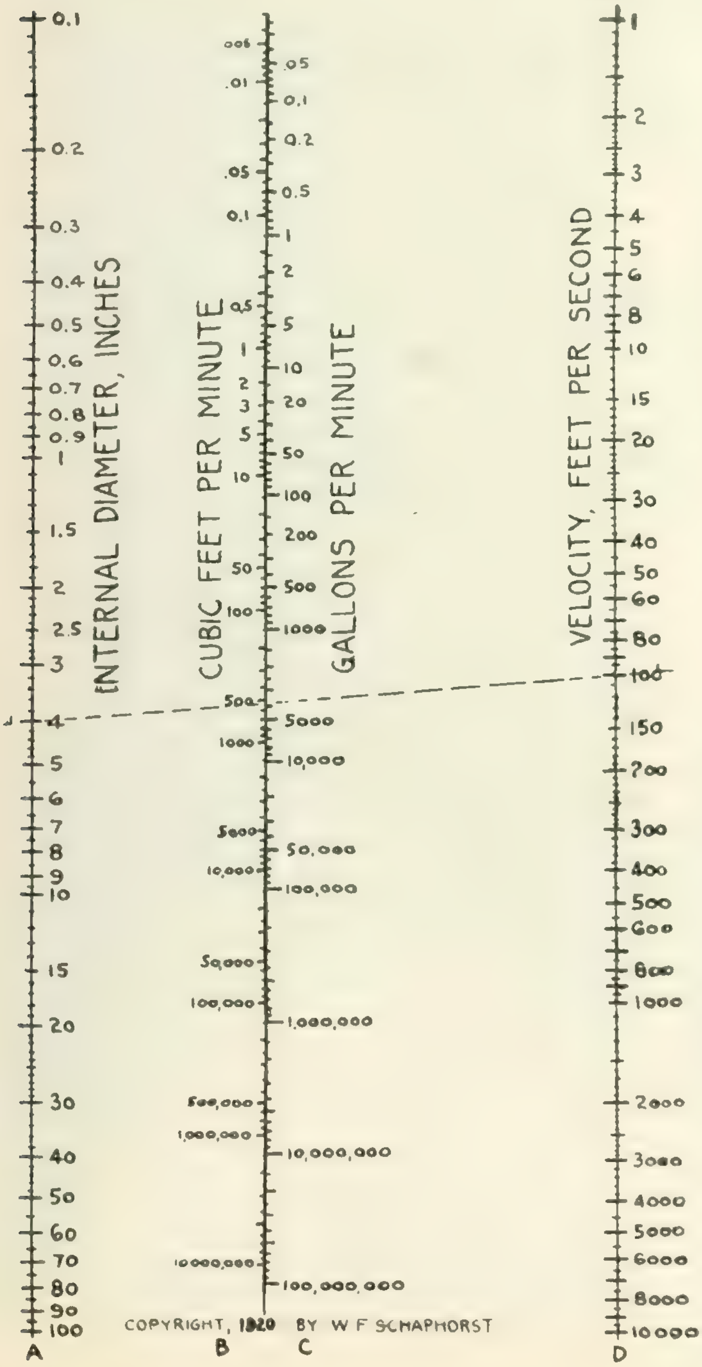
3. What will be the velocity in ft. per second, knowing the diameter and cu. ft. of flow per minute?

4. Same as (3) except that the flow is given in gal. per min.

5. What diameter of pipe must be used to carry a given number of cu. ft. per min. at a given velocity?

6. Same as (5) except that quantity is in gal. per min.

For example, how many gallons per minute will flow through a 4-inch pipe at 100 ft. per second velocity?



The dotted line shows how it is done. Connect the 4 (column A) with the 100 (column D) and locate the intersection with the middle column. Column C tells us the answer—very close to 3,900 gallons per minute.

The range of the chart, it will be noted, is very great. It will handle a water velocity as low as 1 ft. per second, and a steam or gas velocity as high as 10,000 ft. per second. The range for pipe diameters runs from 1/10 inch to over 8 feet. The maximum flow shown on the chart is 100,000,000 gallons per minute, or over 10,000,000 cubic feet.—The Paper Industry.

U.S. RULING ON DUMPED FOREIGN PAPER.

The first specific ruling that paper is being dumped in the United States in contravention of the anti-dumping statute has been made by the Secretary of the Treasury at Washington, the type of paper involved being goat skin parchment. The decision is not only the first relative to paper importations, but is said to be the first of its kind under the anti-dumping act of 1921 relative to any importations.

The memorandum sent to collectors of customs specifies the product of a certain London manufacturer, (Wiggins, Teape & Company) is signed by the Secretary of the Treasury, and says in part:

"After due investigation I find that the paper making industry in the United States is being, or is likely to be injured by reason of the importation into the United States of goatskin parchment paper, first and second quality, and that such merchandise was sold and is likely to be sold in the United States at less than its fair value.

"For any further description of this particular merchandise, appraising officers will communicate with the Comparative Valuation Reports Bureau at New York, where samples are on file."

SURE OF SUCCESS OF JAMES BAY LINE.

Cochrane, Ont., Oct. 29. In the presence of a gathering of 3,000 people, drawn from every point in Northern Ontario, Premier E. C. Drury at 2.20 this afternoon turned the first sod in the projected extension of the T. & N. O. Railway from Cochrane seventy miles towards Oil Can Portage. A special train of thirteen cars came from North Bay and another train of five cars brought people from the Iroquois Falls District.

At a luncheon tendered by the Cochrane Board of Trade, Premier Drury emphasized the Government's belief in the future of the north country and stated that other large undertakings had prevented previous action on the extension by the Government. He wished he was as sure of the success of the hydro-electric development as he was of the James Bay extension of the T. and N. O. The Premier referred to talk of succession as "utter nonsense." The government's aim, he pointed out, was to place the T. and N. O. on a self-supporting basis.

If we carried out all our good intentions, a lot of people in this world would be made wonderfully happy.

The moment a man feels he can rest on his laurels; that moment he begins to slide back.

If you are going to do a good thing do it now; if you are going to do a mean thing, wait till to-morrow.

Technical Section

CLASSIFICATION CHANGES.

R-6. Manufacturing System, has been changed in the Technical Section code for filing abstracts. This number is now **Printing,** etc.

R-12 now reads **Manufacturing System and Costs.**

M-11 now reads **Tanks and Pipes.**

Q-4 now reads **Concrete, Brick, and Masonry.**

REVIEW OF RECENT LITERATURE.

A-3. Reed as Papermaking Material.—A Klein, **Paper Trade Journal,** lxxiii, 12.—A discussion is given of the possibilities of the use of reed, Phragmites communis, and details as to its utilization in Europe. The fiber is comparable with that of esparto.—H. E. W.

A-4; A-5. Cellulose Determination. Paper, xxviii, 14 (June 8, 1921). Translation by CLARENCE JAY WEST from **Die chemische Untersuchung pflanzlicher Rohstoffe, und der daraus abgeschiedenen Zellstoffe.** Jentgen's method of determining the cellulose content of pulp is as follows: 10 Gm. of pulp (cut into small pieces) is covered with 50 Cc. of 17 to 18 percent caustic soda solution, allowed to stand 30 minutes, rubbed with 50 Cc. of water, filtered on a Buchner funnel with a fine cotton filter, and carefully sucked dry. The residue is washed free from alkali with cold water (usually 10 to 12 washings using 50 Cc. for each wash), then with hot dilute acetic acid, then with hot water (6 to 8 times) dried, and weighed. Beta-cellulose is determined by acidifying the alkaline filtrate with glacial acetic acid heating on the water-bath until the beta-cellulose coagulates and settles out, filtering on a fine cotton filter, washing 6 to 8 times with hot water, transferring to a porcelain dish, drying and weighing. The gamma-cellulose and impurities are determined by difference. For determining the total cellulose, 0.25 Gm. of pulp is rubbed with 25 Cc. of 17 per cent sodium hydroxide solution; after half an hour 0.5 Cc. of concentrated sulphuric acid is added, then 40 Cc. to dissolve all the cellulose. Two Gm. of pulverized potassium bichromate are gradually added, and the solution heated just to boiling for one hour. After cooling it is titrated with 0.1 normal ferous ammonium sulphate solution (using potassium ferricyanide as outside indicator) to determine the amount of oxygen required for the oxidation of the cellulose. In the determination of beta-cellulose, best results have been obtained by acidifying an aliquot of the filtrate with glacial acetic acid, diluting with five volumes of water, allowing to stand overnight, and filtering. It is thoroughly washed with hot water, transferred to a platinum dish, dried and weighed.—A.P.-C.

A-14. Analysis of Cardboard.—R. Isnard, **La Papeteries,** Feb. 10, 1921. Translated by A. Papineau-Couture, **Paper Trade Journal,** lxxii, 12 Sept. 22, 1921.—H. E. W.

B-2. Cost of Artificial Forests.—**Paper Mill,** xliv. 37, Sept. 10, 1921. The actual costs of commercial planting of forests are much lower than has customarily been estimated. The cost figures for New York, New Jersey, Vermont, and Ohio are given. The low cost figure for establishing new forests indicates that there will be a widespread expansion of reforestation activity in the east.—H. E. W.

B-4. Utilizing Waste Wood.—Paper Mill, xliv, 37.—Research work by J. H. Wallace & Company has shown it possible to utilize entirely waste wood. The waste which is sufficiently resinate is extracted by a "steam and solvent" process. The residue from this and all the other wood is destructively distilled.—H. E. W.

C-6. Saw Mill Equipment. R. R. FOX, **Paper,** xxviii, 16 (June 22, 1921). General discussion of the importance of proper wood room equipment and of the manner in which manufacturers of this equipment are endeavoring continually to improve their products.—A.P.-C.

D-4. Grinding Tests of Infected and Sound Pulpwood. JOHN S. BATES, **Pulp and Paper,** xix, (June 30, 1921). Detailed account of mill scale experiments carried out in May, 1920, at the Jonquières mill of Price Bros. and Co., Ltd., the main object of which was to compare the yields of groundwood pulp from average, infected and sound pulpwood. At the same time various measurements of the wood and tests of the pulp were made. Five cords each of infected wood, sound balsam fir, sound spruce, and average wood as used by the mill, were used for the tests. The blocks had been stored about two years with some of the bark still on. The selected rotten wood was discolored brown to the extent of about 35 to 40 percent of the total wood mass (no particular estimations were made). In general the infected portions were still firm, though some punky blocks were present. Nearly all the sorted rotten wood proved to be balsam fir, while the average wood was about half balsam fir and half spruce, with some 5 to 10 percent of the mass showing signs of infection. The yields of oven-dry pulp based on oven-dry were 91.1 percent for average wood, 93.9 percent from infected wood, and 92.3 percent from sound wood. Although some of the measurements were subject to slight inaccuracies, it may be said in general that the total quantities of pulp were directly proportional to the dry weights of the wood with yields of about 92 percent on the oven-dry basis. The infected wood yielded better than was expected. The time of grinding (for five cords) was only 2.25 hours for infected wood, and 3.5 hours for sound spruce. The pulp from infected wood was decidedly brown, while spruce pulp was the best in general appearance. Microscopic analysis showed the infected pulp to be a mixture of coarse fibers with a large amount of fine woodflour, whereas the other pulps were less extreme in variation of fibre sizes. The freeness tests showed little difference in drainage properties between infected and average pulps, but the balsam fir fibers were considerably freer than the rest. A beater was furnished with spruce groundwood and about 27 percent of regular sulphite; on the paper machine the stock ran well with no breaks and the paper produced was of good color. Under the same conditions the balsam fir groundwood mixture caused a number of breaks and the stock was rather "soft," though the paper tested almost as well. Infected pulp was mixed with an equal quantity of average groundwood in the beater along with the usual proportion of sulphite. On the paper machine the stock was slow and sticky, and there was considerable difficulty in taking the sheet off the couch roll to the presses. There were many breaks and very little finished paper was produced. The paper made tested surprisingly well, but was decidedly brown in color. The quality of infected groundwood is therefore much inferior for papermaking. If rotten wood has to be ground, it appears that the pulp should be mixed in small amounts with the regular supply of groundwood. A test on the storage qualities of the different pulps showed the danger of infected groundwood spreading decay through a pile of pulp in storage.—A. P.-C.

E-2. Adhesives from Waste Sulphite Lyes. A survey of German patent literature by S. HALEN, translated by C. J. WEST from **Kunststoffe**, xi, 12; **Paper Trade Journal**, August 25, 1921. The article is a digest of German patents secured by Leonhardt, A. Mitscherlich, Jurgensen, Nieus and Combel, Ekmann, Alexander-Katz, Stutzer, Trainer, Pollassek, Huttens, Glaasz and Wipfler.—H. E. W.

F-5. Preliminary Impregnation of Chips with Cooking. (Soda and Sulphate).—**Paper Mill, xliv**, 36. Technical Notes of the Forest Products Laboratory.—The results of tests made by the Forest Products Laboratory show greater uniformity of cooking, increased yields, decreased time of cooking, decreased bleach consumption and increased density of black liquor. The latter caused an increase of 25 per cent in the output of the recovery house.—H. E. W.

F-5; K-6. Digestion of Straw with Sodium Carbonate..—Fritz Paschke, **Wochenblatt Fur Papier-fabrikation**, lii, 23 (1921).—Translated by C. J. West in **Paper Trade Journal**, August 25, 1921.—Sodium carbonate is said to yield better pulp from stray than does caustic soda owing to the fact that the carbonate acts sufficiently on the lignin but does not attack the cellulose as does the caustic. Straw may be completely digested with sodium carbonate at eight atmospheres pressure with a yield of 40 to 45 per cent. Lignin residues separate from the wast liquor on standing and are used as fuel for waste recovery plants.—H. E. W.

G-6; K-11. Pulp and Paper Screens. PHILLIPS DENNET, **Paper**, xxviii, 4 (June 8, 1921). Historical survey of the development of screens, together with a discussion of the various types of pulp screens and of paper screens, of the differences between them, and of their relative merits.—A.P.-C.

G-11; K-13. Waste Recovery in the Paper Industry. Porf. E. BLAU, **Papierfabrikant**, xxxii, 845, August 12, 1921. A description is given of a save-all consisting of a series of inverted cones the water entering at the center and flowing out over the upper edge. A description is given of the Fullner save-all with special felt washing device sometimes installed on them. A description is given of a device designed by Dietrick for breaking up waste papers. In this paper is blown against rapidly moving knives by means of a current of air.—H. E. W.

K-8. Dyestuffs and Their Relation to the Paper Industry. KENNETH T. KING, **Paper**, xxviii, 16 (June 22, 1921). Outline of the dyestuff situation as it exists in the United States at the present day and of the relation of the manufacturer to the consumer, together with a brief discussion of some of the problems that arise daily in general beater room practice.—A.P.-C.

K-9; K-19. Clay Milk and Colors. JULIUS SCHROETER, **Paper Trade Journal**, August 25, 1921. The Vibrating Machinery Company, Inc., 546 West Jackson Boulevard, Chicago, manufactures a mechanically shaken screen called the "Sandhog" for handling clay milk and colors. The machine has a large capacity considering its small size.— H. E. W.

K-12. High Speed Newsprint Machine.—Paper Mill, xliv. 34.—The Laurentide Company's new machine has has a wire 166'' wide and 103'' in diameter from which There is no shake. The machine is equipped with a Millspaugh suction couch 30'' in diameter from which the paper is lifted by compressed air. The first press is of the suction type with a small granite top roll. The other presses have rubber covered bottom and granite top roll. The machine is equipped with a Harland inter-lock individual motor drive. The couch motor is 125 h.p.; the press motors 90 h.p. each; the three drier motors 125 h.p. each; the calender motor 150 h.p. After the machine has been brought up to speed 375 b.h.p. only are required.—H. E. W.

K-18. Manufacture of Asbestos Board. Anon. **Papeterie**, xliii (June 10, 1921).—Brief description of the process of manufacture of asbestos board. — A. P.-C.

K-23. Paper for Calendar Rolls.—Papierfabrikant, xxxii, 843, 1921. Spurs of paper larger than the proposed roll are mounted on the spindle, the machine direction of each succeeding sheet being a fraction of a revolution ahead of the previous sheet. When all of the sheets are mounted the whole is pressed and turned on the lathe. The furnish is usually wool rags and may be a mixture of linen, cotton and wool. The beating time is two to five hours. The resulting paper must be well felted and be free from shives, sand and other impurities. Good calender roll paper shows a rise of water of 80 to 90 millimeters in ten minutes. Acids or alkalies in the paper under the influence of the high temperature maintained during calendering, cause the surface of the roll to glaze after which small pieces of the glaze break off.—H. E. W.

L-4. Paper Sacks. Spoerl. D. R. P. 328,072 **Papier Zeitung**, xlvi, 81, August 6, 1921. Woven sacks are reinforced by weaving into the sack, woven paper strips. These aid in supporting the contents of the bag and the handles of the bag are made of these strips.—H. E. W.

Q-0. Winter Work on a Quebec Waterpower Development. Engineering News Record, lxxxvi, 26 (June 30, 1921). An article dealing with the methods employed in the construction work on a paper mill power project in northern Quebec and the layout of the plant as a reference for future operations under similar conditions. The dam construction required long hauls over snow roads and special provisions for camp sanitation.

R-6. Offset Printing and Paper Production. W. GRUNEWALD, **Papier Zeitung**, xlvi, 78, July 30, 1921. The author mentions the fundamental facts underlying offset printing, dwelling on the qualities of paper best suited for this work. The use of aluminum and zinc plates in the curved from in the rotary offset press is alluded to. Three quarters of an hour after the text is received for printing the zinc plate is ready and 25,000 to 30,000 impressions may be secured from one plate. A sketch of the rotary offset press (Mann system) is shown. The question of the sizing of paper suitable for this work, is taken up, and also the dusting qualities of the paper. The author enters into the economics of the use of calendered and uncalendered paper for offset work.—H. E. W.

Jackets

Contributed by Schuler and Benninghofen, of Hamilton, Ohio, to the Spanish River News.

The use of jackets in connection with the manufacture of paper did not begin until after the development of the Fourdrinier machine; but since the occasion of the use was due to the method of manufacture as developed by hand work, a brief examination of early methods is interesting.

The first paper of which there is record was made by the Chinese in the second century before Christ. Not until the eight century after Christ was there any movement westward. In that century the Arabs acquired the art from the Chinese.

The trend of civilization was then westward and northward and in the thirteenth century Italy and Spain learned the art. In the fourteenth century Germany had become familiar with the processes, and finally in the sixteenth century England began the manufacture of paper.

Until the nineteenth century all paper was made by hand on a device consisting of a mould with removable deckel or frame. The mould with deckel in position was dipped into a vat containing the prepared pulp in such a manner that only the requisite amount of material was distributed over the mould and then lifted out with a shaking motion, so that the fibres of the pulp became intertwined or felted. The deckel or frame was then removed and the mould handed to a second workman called the coucher, who turned the mould over and pressed it against a felt, thus transferring or couching the pulp in the form of a sheet from the wire or mould to the felt.

In 1798 Louis Robert, a Frenchman, invented a machine for making paper which was afterward developed and improved by two Englishmen named Fourdrinier. The machine subsequently named after these two brothers is essentially the Fourdrinier machine of today. In this connection it is interesting to know that the Fourdrinier brothers, possessors at one time of a considerable fortune, died in want, having expended their fortune in the development of the paper machine.

On the earlier paper machines the sheet was developed on a wire screen which passed over two suction boxes. From the screen the sheet was passed between two couch rolls, and from this point carried along by the various press felts to the dryer or calendar rolls. The couch rolls took their name from the old hand process of couching, and accomplished the act of transferring the paper from the wire to the felt.

In old papermaking practice the pair of couch rolls were jacketed. Later only the top roll was jacketed, and today many machines are operated with neither of the couch rolls jacketed. While the function of the couch rolls is to transfer the paper from the wire to the felt, this cannot be accomplished unless much of the excess water carried over with the sheet is removed. The secondary function of the couch roll is therefore the removal of water thus demanding pressure on a yielding surface. The jacket with which the couch roll is covered supplied the yielding surface. When the formation of the sheet of paper is close and provided coloring matter is not used, it has been discovered that a suction box used in connection with a lower perforated couch roll can effectually accomplish the act of transferring the sheet without jacketing the top couch rolls. Many paper machines making heavier grades of paper, equipped in this manner, are in constant operation.

The jacket must be made of such material, and in such a manner that it will hug the couch roll throughout the life of the cloth. The wool used for making jackets must be carefully selected for felting quality and strength. Briefly, the processes in the mill making the jacket are as follows: grading of wool stock, sorting, securing, drying, preparing for picker, pickering, carding, spinning, spooling, warping, cop winding, weaving, burling, scouring, fulling, drying, shearing, cutting, stretching, napping and singeing.

While it may be possible to make satisfactory jackets from wools gathered in any particular locality, sixty-three years of experience in the manufacture of paper mill felts and jackets convince us of the importance of gathering materials from all the wool producing countries of the world, and selecting those best suited to the work in hand. In the wool stock from which the yarns used in weaving the jackets, are made, must be represented strength as well as felting quality. It is hardly possible to secure both qualities from any one particular grade of stock, and for this reason careful blending of several grades of wool is required.

The wool is prepared, pickered, carded and spun into rather bulky soft yarns used for the filling, and finer harder threads used for the warp. A warp is next prepared, placed in position in the loom harness, and weaving commenced. Long stock tubes consisting of many plys are woven. Because of the large number of plys, and the fact that the tube is woven round, thus in effect requiring the production on the loom of practically two pieces of many plyed cloth, the operation is very slow.

Usually the tubes are made of sufficient length to make many jackets of the same diameter, and after the desired length is woven, the piece of tube is taken from the loom and carefully examined inch by inch for defects either of weaving or spinning. The examination completed, necessary repairs or adjustments are made, and the piece of tube is next tied together at the extreme ends and sent to the scouring and fulling department, where it is given a scouring preliminary to fulling. Fulling is accomplished usually in a rotary mill and consists of continuously rolling the material between two sets of rolls After a time the direction of operation is reversed in order that even fulling may result. The fulling operation requires many hours of time for each piece, and is probably the most important single process in the manufacture of the jacket.

After the tube is fulled to proper size, it is thoroughly scoured and rinsed. Drying, then shearing, takes place, after which the tube is finished and ready to be cut to size. This done, the jackets are stretched, if stretching is required then napped and singed.

Besides the woven jacket, there is used in Europe a carded, felted and pressed jacket, which has no cloth structure, but is felted directly from the fibre.

In the selection of types of jackets for the paper machine, it is well to remember that regardless of over all thickness, there must be hardness. The jacket when grasped by the hand must be hard. Lacking this prime requisite it will surely fail to perform satisfactorily. After the jacket has been placed on the roll it must hug the roll tightly. If it does not, it will also prove unsatisfactory.

When using jackets on the paper machine, it is well to remember that they should be kept clean. At the end of every week saturate the jacket with a pure soap solution, then clean with a strong stream of water from the machine hose.

Be careful not to permit the ends of the guard board to press too hard against the jacket. If this is permitted, the ends of the jacket are worn out, while the balance is in good order.

PULP AND PAPER NEWS

For several weeks past, and, doubtless, until the actual polling-day, the attention of the country has been largely fixed on fiscal matters. Yet it may be doubted whether the subject of forest conservation is not one which affects the prosperity of Canada almost as closely as the tariff, or any other of the issues now being discussed at such length both from the platform and the press. Such, at any rate, is the view of Mr. Robson Black, secretary of the Canadian Forestry Association, as expressed by him in an address before the Kiwanis Club in Toronto, the other day. He stated —what is, indeed, a notorious fact—that the forest and pulpwood resources of Ontario are in a state of rapid decline, mainly, through forest fires; and he added that one of the best investments that Province could make at present would be to turn back into forest protection and constructive forest management from one half to two-thirds of the total annual revenue of nearly $3,000,000 received from Crown timber lands and operations.

At the same time while Canadian timber wealth is undoubtedly being drawn on too rapidly—too rapidly, that is to say, in proportion to the rate at which it is being attempted to replenish it—her total pulpwood resources, according to a recent estimate made by the Canadian Commission of Conservation amount to 901,000,000 cords of coniferous pulpwood species, added to which there are also large quantities of poplar and jack-pine in all the Provinces which are, to an extent, used in the manufacture of certain papers. The Commission places the supply of spruce and balsam, accessible and inaccessible, in the eastern Provinces—that is to say, in Ontario, Quebec, New Brunswick and Nova Scotia—at 501,000,000 cords. Of the latter amount, 306,000,000 cords, roughly speaking, are actually available. The amount consumption and pulpwood exports from these four Provinces is between 5,000,000 and 6,000,000 cords. But, if only we take warning from the squandering of their pulpwood resources by the United States and other countries, we still have the opportunity intelligently to conserve our valuable possessions of this nature and, at the same time, take a worthy part in the exploitation necessary to supply world requirements.

The Dominion Government has always been aware of the necessity for encouraging tree culture on the Prairie but it was not until 1901 that a really definite and practical scheme for assisting settlers in this work was put into operation. In that year, the first distribution of trees was made under the cooperative scheme of the Forestry Branch of the Interior Department. From a small beginning, the distribution of trees from the nurseries at Indian Head and Sutherland, Sask., has grown until now it averages about 5,000,000 seedlings and cuttings each season, half of which are planted in Saskatchewan and the balance in Manitoba and Alberta. As a consequence of this distribution, there are now found in all parts of these Provinces examples of excellent farm shelter-belts.

Several references have appeared, from time to time, in these columns, relative to the groundwood pulp mill, now in course of erection by the Temiskaming Pulp and Paper Company, of which Mr. Alex. Fasken, K.C., of the firm of Fasken, Robertson, Chadwick and Sedgewick, barristers, of Toronto, is president. This mill is being erected at Dixon Creek, near Haileybury, Ont., and those who have been in the locality recently report that excellent progress is being made with its construction. It is expected that the early spring will see the plant in operation.

The Abitibi Power and Paper Company, Ltd., of Iroquois Falls, Ont., is installing a new wrapping paper machine, which will probably be in operation in a few weeks' time.

As has been pointed out before in these columns, the striking printers of Toronto are displaying quite a phenomenal interest in the present election. Mr. James Simpson, the well-known Socialist, whose advanced views are a matter of common knowledge throughout the length and breadth of the Dominion, has, from the very inception of the printers' strike, distinguished himself by his fervent advocacy of the strikers' cause. He is now a candidate for Parkdale, one of the electoral ridings of Toronto, in the Labor interest, and it is stated in Labor circles that he will receive strong support in his candidature from the Typographical Union.

When Hon. T. W. McGarry, President of the Whalen Pulp and Paper Mills, Ltd., was in Toronto, the other day for a meeting of the directors of that Company, of which he was re-elected President and Mr. W. D. Ross was elected vice-president, he expressed himself very optimistically as regards the situation at the mills. Things are going exceedingly well, "and we are in first-class shape", he said emphatically.

It was announced from Vancouver on Monday of last week that the British Columbia Federationist and A. S. Wells, its publisher, would be committed by Magistrate Shaw for trial in the higher courts of the Province. It is presumed that the charge will be one of "publication of seditious matter." Mr. Wells was recently summoned to the Vancouver police count, at the instance of the police department, in connection with the publication in the Federationist of an article signed by Lenin, president of the Russian Soviet Republic, under the heading, 'Left Wing Communism." The magistrate announced that he was bound to commit Mr. Wells for trial on account of the publication of the article.

A new match manufacturing company is to be formed in Canada. The factory of the concern, in which Maguire, Paterson and Palmer are financially interested, will be at Pembroke, Ont., where the Company just named possesses property, and where a large plant making match splints has been operating for some time.

The Spanish River News, published by the Spanish River Pulp and Paper Mills, Ltd., has been discontinued, owing to the present necessity for rigorous economy, and, in its stead, a series of bulletins on matters of interest to those connected with the Company will be issued from time to time.

UNITED STATES NOTES

With the announcement of $2,000,000 issue of first mortgage 7½ per cent sinking fund bonds by the Continental Paper and Bag Mills came the report last week from the Mid-West that extensive improvements and a large scale expansion scheme are projected in the company's several Western plants. Part of the plans call for the erection of a new paper mill at Oconto Falls, Wis., where water power development is also projected. A new paper machine has been purchased by the company for installation in a new building in course of construction at the Park mills, Marinette. Other extensive improvements, the details of which are now being worked out, will be announced later. The company gave out an announcement stating that it owns at least 500,000 cords of spruce and other pulp wood in the Canadian provinces of Quebec and Ontario. When the new paper machine in the Marinette plant begins operating, the daily capacity of the concern will be increased to 100 tons of fibre, kraft, bag, news and hanging papers. The raw material production will be 55 tons of sulphide and 40 tons of groundwood per day. The development of additional water power at the Ocanto Falls plant will increase the daily paper-making capacity there fully sixty tons. Stock-holders of the concern have been notified of a regular quarterly dividend payment to holders of record on November 15, one and one-half per cent on the common and preferred stock.

Plans of railway executives to cut rail wages, then rates, have the approval of officials of the American Paper and Pulp Association. In a set of resolutions adopted at the third annual fall business conference in Chicago last week, the Association went on record declaring that the transportation problem is vital to national prosperity and the wage reductions are absolutely necessary before freight rates could be cut.

In a statement issued just prior to the opening of the conference sessions, Dr. Hugh P. Baker, executive secretary of the association, expressed the view that American business generally is showing a steady upward trend. "There is not the slightest doubt that conditions are better than they were three months ago," said Dr. Baker, "and the prospect for the future is still brighter."

"In the principal address made during the second day's session, O. M. Porter, secretary of the Woodlands Section, gave the results of a survey of wood on hand and projected operations, which were summarized in our last issue.

R. S. Kellogg, Secretary of the Newsprint Service Bureau, discussed paper importations from Europe. Mr. Kellogg gave figures showing comparative freights between foreign shipping points and American points, as evidence of the conditions confronting the paper industry generally. He pointed out that it will be the publishers who will suffer in the long run, for American mills cannot make paper to meet present European prices, and Europe cannot supply America's permanent needs.

W. J. Raybold, president of the American Paper and Pulp Association, said that he had been receiving reports which indicate that manufacturers have had an increasing business since July. "The paper industry in general has very evidently turned the corner to normalcy," is the way Mr. Raybold summed up the situation. Specific instances showing the trend toward better conditions were cited by Dr. Hugh P. Baker who said that he had received reports telling of 25 per cent production increases in some localities. The high-grade paper industry, according to Dr. Baker's information, now works its employees four days a week instead of three.

The Southern Cotton and Paper Company, recently organized at Chattanooga, Tenn. with a capital stock of $200,000, is getting under way work on a plant and paper mill at Chattanooga which, when completed early next year, will manufacture paper and paper pulp from cotton linters, utilizing a patented process devised by the company's president, Mercer Reynolds, a prominent Chattanooga business man. According to present plans the mill will have a capacity of fifteen tons of paper at the start of operations.

The Associated Industries of Massachusetts, in a recent election, honored a widely known paper executive, George A. Galliver, head of the American Writing Paper Company, by selecting him as one of its three vice-presidents.

The many friends and acquaintances in the paper business of M. E. Battles will miss him now that he has retired as treasurer and general manager of the Union Twine and Paper Company of Cleveland. Mr. Battles' connection with the industry dates from 1891, when he first became associated with the Union Twine and Paper Company. He has served this firm continuously since that time in various capacities. Although he is retiring to private life, Mr. Battles will continue as one of the directors of the company.

Several score employees of the Continental groundwood pulp mill at Ogdensburg, N.Y., have been thrown out of work through the closing of the plant. Unsurmountable competition brought about by high freight rates and low prices on imported pulp are given by the management as reasons why operations had to be suspended. The shut down is for an indefinite period. It is explained by the owners, James A. Outterson and Frank A. Augsbury, that pulp is being shipped into New York from Norway and Sweden at a cost of $21 on the docks while it costs $27 a ton to make it at Ogdensburg. The freight rate from Ogdegsburg to Carthage is $12 a car load. The Continental mill represents an investment of $375,000. It is a unit of the Ogdensburg Paper Mills, Inc., and was put into operation only a few months ago. The owners express a hope that there may be an early adjustment of transportation rates in addition to a tariff arrangement which will give to American industry a fair chance in the competition with foreign lands.

Attention is the stuff that memory is made of, and memory is accumulated genius.—Lowell.

To become an able man in any profession, there are three things necessary—nature, study, and practice.—Aristotle.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 5th Nov.—At the end of October there was very general agreement among those engaged in the industry, in nearly all its branches, that conditions were decidedly better than they had been at the end of any previous month this year. In part, this is the cause, and, in part, it is the consequence, of greater confidence. Manufacturers are showing this greater confidence by the manner in which they are increasing their percentage of operating capacity. Wholesalers are exhibiting more confidence in placing orders of substantial size. And consumers are displaying more confidence by a greater willingness to take in supplies. This greater confidence, of which one sees evidence all around, has taken a long time to create. One factor, which has prevented its creation earlier has undoubtedly been the question of prices. Time and again, one has been told, with what looked like adamantine decision, that prices were at rock bottom: "Is another drop to be looked for soon?" "No, Sir, the next move in prices will be upwards. I'll tell the world." This has been the line of talk handed out. Then, lo and behold! the very next week, prices have been on the toboggan! Now, however, there does seem real reason to believe that, in practically all lines, there will be no further recession of prices in anything that can fairly be termed the near future. Taking that view, it looks as though consumers, or many of them, had come to the conclusion that price recessions of any substance are now out of the question, and that consequently the path of wisdom for them lies in equipping themselves for the demands of improved business by having reasonable stocks on hand, rather than by continuing to pursue the policy of "hand-to-mouth" buying which they followed for so long this year, merely on the off chance that they may, later, get goods at prices just a shade finer than those now obtaining, and with a distinct risk that prices may advance instead of receding. Further, one is told that there has recently been a distinct diminution of the price-cutting by wholesalers to which attention was directed, some weeks ago, in these columns. All these factors are making for enhanced stability. It is true that the volume of business done so far this year in the paper industry as a whole does not compare favorably with that done in the same period during the last two or three years. But one finds that men of far-sightedness and sagacity are, more and more, taking the view that business is now on a more stable and satisfactory basis than it has been for years. Certainly the general opinion seems to be that a long time of sound and moderately satisfactory business lies ahead. Depression and deflation set in together. Earlier than some businesses, the paper industry encountered both. Earlier, too, than most, and more satisfactorily than many, it is passing from the shade to the sunshine.

PULPWOOD.—Some exceptions to the contrary notwithstanding, the pulpwood situation continues to be remarkably listless. Logging operations, on the whole, are on a decidedly more limited scale, this year, than usual. The mills, for the most part, have comparatively large stocks of pulpwood on hand, and another (and possibly even more effectual) deterrent to entering into contracts for wood for next year is the feeling that it is probable that prices will take a tumble before next spring. This feeling, it may be added, is both widespread and well defined. Next winter, however, it is said that pulpwood operations will be on a much larger scale.

PULP.—The symptoms of improvement in the demand for some grades of pulp, which have been previously noted, have turned out to be indicative of a considerably better market. The reopening of the Riordon Company's Kipawa plant has synchronized with this better demand for the class of products that are turned out by the plant. But, while the demand for strong bleached is better and shows signs of being on the upgrade, that for easy bleaching, at a price at which it can be profitably sold, still leaves a good deal to be desired. The President of the Whalen concern stated in Toronto the other day, that the market for pulp was improving daily.

NEWSPRINT.—Various factors have combined to stimulate the demand for newsprint. The mills—notably Laurentide and Abitibi—are speeding up production, and consumers are becoming alive to the necessity of laying in stocks in larger quantities. Within the last couple of weeks the newsprint situation has taken on a decidedly brighter and brisker aspect. At this time of year, it is not out of the way for the demand for newsprint to slow down. But this year it is not showing much signs of doing so.

BOOK PAPERS.—The market for book papers continues firm. Orders are coming in with a tendency to increase both in number and in size of individual orders. While there is still room for improvement, the general feeling appears to be that prospects are encouraging.

MANUFACTURING STATIONERY.—The improvement, which has been manifested during the last few weeks in the manufacturing stationery situation, still continues. It is expected that an expansion of demand from now on, will be making itself felt.

BOX BOARD.—The box board market is exhibiting much more activity. Mills are running full time, and orders are coming along with gratifying frequency.

WASTE PAPER.—The demand for waste paper generally continues constant in spite of a few fluctuations.

TOILETS AND TISSUES.—The situation in toilets and tissues has undergone no material change. Business in both gives no cause for complaint.

NEW YORK MARKETS.

New York, Nov. 5—(Special Correspondence).—There have been several developments of prime importance in the paper and pulp industry this week. Probably the foremost of these is a sharp advance of a full cent per pound in the price of domestic bleached sulphite arrounced by the leading producers of this kind of sulphite, to become effective December 1. The new price basis will be 5.25 cents per pound f.o.b. pulp mills, which compares with a prevailing price of 4.25 cents.

Which of the several leading domestic manufacturers of bleached sulphite took the lead in advancing quotations is not known, but the fact that the Brown Company, of Portland, Me., which operates the Berlin Mills at Berlin, N.H., together with the Eastern Manufacturing Company, at South Brewer, Me., the Mt. Tom Sulphite Company, of Holyoke, Mass., the Penobscot Chemical Fiber Company, of Orono, Me., and other producers, all announced a rise made the new price basis conclusive as these concerns are the principal manufacturers of bleached sulphite in the country.

Another market change of note has been a further jump in prices on kraft wrapping paper approximating half a cent per pound, making the new basis 7 cents a pound for No. 1 domestic kraft. This advance was not altogether unexpected in the trade. It has been known for some time that a majority of mills making kraft wrappings are sold ahead for the next two or three months, some having their entire output for the balance of the year contracted for. Moreover, unfavable water conditions at many mill centres have caused a considerable curtailment of production, while demand for wrapping paper has consistently broadened, as it usually does during the fall of the year. Then, too, raw material has been advancing, kraft pulp of both foreign and domestic origin having increased in cost to a substantial extent in recent weeks. All of which more or less paved the way for an advance in kraft wrapping paper, making the second rise within a period of eight weeks. On September 1 last there was an increase of half a cent per pound, and the revised price now effective is a full cent per pound above the bottom level reached by the market in August.

The newsprint situation is steady in tone and offers much encouragement to the paper manufacturer and dealer. Consumption is steadily increasing, with the result publishers are taking all the tonnage they have contracted for and are frequently coming into the market to augment their supplies. When the threat of a railroad strike was made some two or three weeks ago, newspaper publishers hurried to place orders with paper mills for additional tonnage of newsprint for quick delivery, it being feared that should the strike go into effect difficulty would be experienced in obtaining the paper needed. Mills therefore were suddenly deluged with orders, and promptly increased their operations to take care of the additional business. When the strike was declared off, there was, as expected, a lot of cancellations, but here the unexpected happened. Newsprint manufacturers looked for practically all the extra orders placed by publishers to be cancelled, but, according to a high authority in the trade, not more than 50 per cent of these orders were cancelled, and further buying by other publishers almost immediately afterward because of increased paper requirements easily offset the cancellations, thus leaving mills with fully as much business on their books as before.

Spot prices on newsprint in standard rolls range from 4 to 4.25 cents per pound at mills. Most of the transient trade is going through at the higher figure, though manufacturers are said to be accepting orders for sizeable tonnage at the low price, which is the same publishers are paying on contract deliveries. According to News Print Service Bureau figures, production of newsprint by United States mills during the nine months of this year to September 30 was 24 per cent less than in the corresponding period of 1920. Canadian production was 12 per cent less than a year ago, or an average of 19 per cent less for 44 companies reporting in the States and across the border.

There is still much talk in the trade regarding large supplies of cheap German newsprint, yet offerings are of light tonnage and everything would seem to show that the reputed large supplies from this source are more fiction than fact. Reported offerings of paper from abroad at less than 3 cents a pound are not taken seriously in the trade. Some German newsprint is known to have sold well above 3 cents recently, and it is authoritatively stated that the bulk of foreign newsprint being marketed here is bringing better than 3.50 cents. According to figures just at hand, Germany exported only 25,413 tons of newsprint to the United States during the first eight months of this year. This quantity is but a drop in the bucket of the total tonnage consumed by American publishers.

Book papers have quieted down to an extent after enjoying several weeks of brisk demand. Prices are holding, however. Tissues are steady and are moving in comparatively good amounts. Fine papers are improving their market position in a consistent manner, and obviously the sharp advance in sulphite prices this week has had a strengthening effect on sulphite bond and ledger papers. There is less doing in plain box boards. Folding box boards and corrugating boards are in increasing call, but set-up paper box manufacturers have diminished their buying, with the result news and chip boards are moving in smaller amounts. No change is reported in quotations.

GROUND WOOD.—Mechanical wood pulp rules steady in price and is moving into consuming channels in consistently good volume. The market, however, is bare of feature aside from the firmness noted in quotations. Producers appear to be finding a ready outlet for practicaly all the pulp they have to sell, and consequently are not inclined to consider granting price concesions, particularly since many of them are having much difficulty in operating because of low water. Around $30 per ton at grinding plants is the price generally quoted, with some sales being accomplished at higher prices in cases where the consuming mill is situated cose to the grinding plant and a low freight rate is involved.

CHEMICAL PULP.—The advance of a full cent per pound in bleached sulphite prices by leading domestic producers is of course the outstanding development of the week in chemical wood pulp. There is no question that the advance caught the pulp trade unawares; that is, while many expected bleached sulphite was due for an advance, few or none looked for prices to be jumped as much as a cent per pound. The revised price basis is not effective until December 1, so that dealers and mill agents are given an opportunity to prepare for the change.

There has been little or no actual change in other grades of chemical pulp. Of course the advance in bleached sulphite has served to stiffen quotations on all grades, and the market tone is exceedingly firm, with buyers finding it necessary to pay full quoted figures to obtain supplies. Kraft is moving in steady fashion and at well sustained prices. Domestic kraft of strictly No. 1 grade is bringing up to 3 cents per pound at pulp mills, while secondary grades are selling at around 2.75 cents. Scandinavian kraft is quoted on a broad range of from 2.50 to 3 cents, depending on the quality of the individual lot concerned and the tonnage involved as wel as the position of the pulp. For example, spot lots

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RAGS. Paper mills are absorbing rags in rather limited volume. There is a steady demand for several grades, notably roofing stock and old white rags, but on the whole buying is of hand to mouth variety with the average order calling for small amount of rags. Nevertheless prices are firm, and there is a surprising lack of selling pressure. Dealers claim to have less than normal stocks on hand and say there is no incentive for them to grant price concessions because they replenish stocks at lower costs.

No. 1 roofing rags are selling at around 1.25 cents a pound f.o.b. New York, and No. 2 packing at an average price of 1.15 cents. Old repacked No. 1 whites are bringing from 6 cents upward at shipping points, No. 2 repacked around 3.50 cents, and street soiled whites between 1.65 and 1.75 cents. New white shirt cuttings are very strongly held, with sales to mills in the Holyoke vicinity reported at 11 to 11.50 cents per pound delivered for No. 1 quality cuttings. There is a fairly good demand for new unbleached muslins, which are quoted at 9 cents at shipping points; for new light silesias, which are bringing 7 cents, and new white lawns, for which dealers ask 8.75 cents. Old thirds and blues are quiet, with repacked blues at 2 to 2.25 cents a pound at shipping points.

PAPER STOCK.—Old papers are finding a fairly ready sale and prices are holding up well. Several grades have slowed up during the past few days, this being attributed to the withdrawal of western paper and board mills from the eastern market, but packers continue to name the same quotations and seem to feel that demand will soon revive. Old folded newspapers are moving freely at 65 to 70 cents per hundred pounds f.o.b. New York, as is No. 1 mixed paper at 55 to 60 cents. Old kraft paper is selling at 2.25 cents a pound New York, white blank news cuttings at 1.90 cents, ledger stock at 1.70 cents and print manilas at 1.05 cents. Shavings are quieter and so are books and magazines.

OLD ROPE AND BAGGING. Demand for old rope appears to be constantly increasing, and sales to paper mills at 4.75 cents a pound at shipping points have been reported, with some talk heard of 5 cents being paid. Old bagging is moving in scattered directions, and, in the aggregate, in small volume at last reported prices.

No use to wait for our ship to come in unless we have sent one out.

EVEN SLIGHT ACCIDENTS VERY COSTLY.

An accident is a bad business at any time, but especially so in slack times like the present.

Most men find it hard enough to get on under present conditions without losing more time through accidents. It does not make much difference whether the acident is slight or serious. There is a big loss of time and money for even the slightest accident.

A slightly bruised index finger caused the loss of three whole working days and took $20.64 out of the pay envelope. Burnt fingers lost 32 hours and $15.36 for another man. A strained right hand cost the loss of 40 hours and $24.40. So an accident, no matter how slight, is far too dear at the price. No one would think of buying one, yet a second's carelessness is the purchase price, and eight men paid it during the month of September

With all the industries in Canada fighting for their lives, with overtime cut out, in some cases on short time, with staffs and rews reduced to the minimum, and the pay envelopes lighter than for some time, the carelessness which causes an accident is criminal.

Any pay envelope minus $15.00 or $20.00 is a pretty light lift for an able-bodied man, and is a mighty poor thing to take home to a wife and children.

"Eternal vigilance is the price of safety," is just as true of the men in the mill as it is of nations in the world game.

Add loss of time due to an accident to short time, and where does a man get off at? It is absolutely imperative for every man no matter what his position, to see to it that he plays safe himself and that those around him play safe also.—Broke Hustler.

Shall I go over the top?" asked the talkative barber, poising his scissors.

"Yes, as soon as your gas attack is over," answered the weary customer.

Generally, downright facts may be told in a plain way; and we want downright facts at the present, more than anything else.—Ruskin.

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

THE WASHINGTON CONFERENCE.

Before this issue reaches our readers, it is quite probable that the conference in Washington will have arrived at some definite agreement on the matter of disarmament. The Secretary of State of the United States has given the proceedings a great impetus in the manner in which the conference was opened and by the immediate proposal of a definite and an apparently workable scheme. Certainly the world has been astonished and greatly cheered by the immediate proposal to reduce naval armament and expenditure for further building and to do it *now*. No doubt the emphasis which Mr. Hughes put on that word "now" is the most important feature of the proposal and one which will cheer the hearts of millions the world over.

There is always some "Gloomy Gus" to cast a shadow and perhaps such individuals are of some use in the world. The point which they seem to emphasize just now is the likelihood of causing industrial depression in the world's great ship building centres where heretofore there has always been great activity in the construction of war vessels. This feature need cause no great concern because we have seen with what facility enormous organizations, built up purely for the manufacture of military equipment, have been converted to efficient manufactories of articles of peace and there is no doubt but that ship yards, if not all required for building commercial shipping, could undertake the construction of steel work of an industrial character. It may seem that the amount of taxes that each worker in naval ship building will be relieved of will not go very far towards paying his bills but when it is remembered that his relief is multiplied by millions through the similar relief to his fellow citizens, there will be no question in his mind but that the great increase in purchasing power of the nations of the world will soon find plenty of work for all hands and an increased demand the world over for the products of peace. It is this phase of the situation which should be borne in mind by Canadians when they think of the effect of naval disarmament on the products of Canadian industry. An improvement in purchasing power the world over will result from disarmament and will greatly increase the demand for Canadian goods.

THE NEW SECRETARY.

The success of an association is probably more dependent upon the selection of a suitable secretary than any other one factor. No matter how carefully the policy of an association is formulated and expressed, no matter how great the advantages to members from their opportunity of co-operation, no matter how prominent the president and the other officers, it is upon the secretary that the association must depend for the important work of maintaining enthusiasm, projecting plans of activity and accomplishing that most important function, namely, maintaining contact between the association and the public. The Canadian Pulp and Paper Association has been most fortunate in the character of the men who have filled the important position of secretary.

Because of the intimate association between the Pulp and Paper Magazine and the Pulp and Paper Association, especially during the early part of the latter's existence, it will be appropriate to mention a few points connected with the formation of this organization.

In 1912 Mr. A. G. McIntyre undertook the work of editing the Pulp and Paper Magazine and almost immediately there developed a movement for the formation of the Forest Products Laboratories of Canada somewhat on the basis of the organization and work done at Madison, Wis. Because of Mr. McIntyre's ability and experience, his services were sought by the Department of the Interior, as director of the laboratories. An arrangement was made whereby the publishers brought the work of printing the Pulp and Paper Magazine to Montreal in order that Mr. McIntyre could occupy the dual position of editor of the magazine and director of the laboratories. This was early in 1913. In the spring of that year, the feeling began to grow among pulp and paper men that they should be organized. This desire was fostered by the Pulp and Paper Magazine and a meeting was called in Montreal which resulted in a committee to draw up plans for an organization along the lines of the Association of mill owners such as had been in existence in the United States for about thirty years, although there were some who had hopes of an association which should include more of the operating officials. It will be seen that this latter feature was largely met by the organization in February 1915, of the Technical Section of the Association.

Because of his enthusiastic efforts with regard to the formation of the Association and his other positions which brought him in close contact with all branches of the industry, Mr. McIntyre was selected as the first secretary and the first annual meeting was held early in 1914. Mr. McIntyre was succeeded at the Forest Products Laboratories by Dr. John S. Bates who has always taken a keen interest in the work of the Association, particularly in the Technical Section, and when Mr. McIntyre resigned as secretary and editor towards the end of 1914, Mr. Roy L. Campbell took on the duties pertaining to both these offices and continued in the effective discharge thereof until 1916.

During these first years of the Association, the Pulp and Paper Magazine was published twice a month. Beginning with 1917, however, the magazine became a weekly publication and, on account of the necessarily heavier work thus attaching to the editorship, and because, at the same time, the work of the Association had very largely increased, it seemed inadvisable further to continue the combination of the two offices. As a successor to Mr. Campbell, Mr. Arthur L. Dawe was chosen. Until that time Mr. Dawe was not widely known among the pulp and paper men but had established an enviable record for efficiency and reliability in the various positions that he had held. As a member of the staff of Edward Lloyd, Ltd., Paper Makers, England, and Canadian manager for the same concern for several years, as well as in his position as sales manager for the Federal Paper Company, Montreal, Mr. Dawe obtained a first hand knowledge of paper and its distribution which has been a great asset not only to himself but to the association. But the secretaryship of the Pulp and Paper Association has always been a step towards greater responsibility and larger opportunities for service, so, in the course of events, it has just been announced that Mr. Dawe has resigned as secretary to accept an important position with the Canadian Export Paper Company. No one regrets the altered atmosphere of the association office due to the absence of the cheerful, friendly, enthusiastic personality of Mr. Dawe, more than the editor and no one is more pleased than he at the choice of the Executive of the Association in selecting Mr. Edward Beck to occupy the position of secretary and manager of the Canadian Pulp and Paper Association.

Mr. Beck has been for sometime in close contact with the affairs of the Association through his work as publicity manager and through his discharge of the secretary's duties during the absence of Mr. Dawe in England for several months in 1920. The association work, in fact, association work in general, is now entering a phase in the development of the association idea which makes it most appropriate that a man of Mr. Beck's qualifications should undertake the secretary's duties and it is certainly fortunate that such a man as he is available for the position. Mr. Beck is an experienced journalist, a ready writer, and a clear thinker who is able to formulate a policy, to develop arguments, and to present a proposition with convincing clearness. There is no doubt but that Mr. Beck is just the man for the position at this time. It is with the greatest pleasure therefor, that we extend to Mr. Beck our hearty congratulations on his appointment and offer him every kind of assistance which can be rendered personally or through the columns of the Pulp and Paper Magazine. At the same time we wish also to express our gratitude and appreciation to Mr. Dawe for the unfailing and unceasing courtesy and help which he has always extended to the Pulp and Paper Magazine. We wish him every success in his new work.

THE EAGLE EYE OF THE FOREST AIRPLANE.

The use of airplanes in forest protective work is bringing to light some valuable features that had not been anticipated. Most forest fires are caused by the carelessness of human beings. If prospectors, hunters, campers, fishermen, and others who go into the woods for business or pleasure could be educated to be always careful with their camp fires, their matches, and their cigarette stubs over half the load would be lifted from the shoulders of the fire fighters. This is the reason why the fire warning poster is probably the most important single factor in forest protection. And here comes in a little psychology in which the airplane figures. When a man camps at a place where a warning against the careless use of fire is conspicuously posted he is careful to put out his fire, but when he camps at a spot where he seems to be outside of the range of human touch or observation, he is apt to grow careless and fires are likely to follow in his trail. One of the Dominion Forestry Branch inspectors, in reporting on his first week's experience in observation from an airplane, records this fact that men camping in the woods or out from the city for a few days or a week-end are suddenly and effectively reminded of what they ought to do by the appearance of an airplane high above them, attending strictly to its business of patrolling the forest. This impression is deepened when the men realize that they and their camp have been seen from the airplane. Of this they are certain, when they see a message fluttering down to them through the air. They naturally watch where the paper falls and, if possible, get it. They find it a message reminding them that as citizens of Canada, they should assist the Forestry Branch and the Air Board in protecting their own property—the forest—by being careful with fire. As preventing fires is much more economical and effective than fighting fires, this feature of airplane patrol is of great importance.

MR. CLARK'S HALF CENTURY AS EDITOR.

Fifty years is a long period of service for a man to put in on one newspaper in view of the frequent changes in ownership and management that take place in these hustling days. Those journalists who have such a record are few in number and are not increasing very rapidly as the years go by.

One of them is Charles Hopkins Clark, editor of the Hartford Courant, which was established as the Connecticut Courant in 1764 and is said to be the oldest morning American newspaper. On Sunday Mr. Clark completed his fiftieth year with that publication. He has been and still is, one of the bright and shining lights in the journalistic firmament of New England. Possessed of a keen, analytical mind, an intimate knowledge of the political history of the country and of its institutions and ideals, and having a firm belief in the future possiblities of our nation, Mr. Clark has won for himself a high place in the confidence of the great public whom he delights to serve.—Editor and Publisher.

Speaking of the "silent agitator"—it is sometimes much better to remain silent and be thought a fool, than to speak and forever remove the doubt.

Engineering as Related to the Pulp & Paper Industry

By H. S. TAYLOR, Chief Engineer, H. S. Taylor
Limited, Montreal, Quebec.

Editors Note:—Some time ago the Pulp and Paper Magazine arranged with Mr. H. S. Taylor for an article on the planning of a pulp and paper mill. We are fortunate in being able to announce that other members of the staff of H. S. Taylor Limited, who have designed and installed several successful Canadian plants, have agreed to contribute to what will now be a series of articles on this subject. Mr. Taylor himself contributes the first article, which sets forth the fundamentals of paper mill engineering, and is presented at an appropriate time, because winter is the time for the making and planning, so that actual work may progress most efficiently. The engineer "thinks with a pencil."

In the earliest history of civilization certain lines of human endeavor were recognized as essential to the community, and as civilization began its onward march it soon became evident that a certain line of endeavor always proceeded this onward march, blazing the trail of progress by its own creations. These certain lines of human endeavor remain in the same relation to progress as they were in the beginning, but today they are called professions, each profession with its many branches following its special subject more and more closely to this the day of specialization.

Of the many professions, engineering is perhaps one of the broadest, its followers being found in all parts of the globe, engaged in the many different fields of work that come within its scope. As new discoveries were made and perfected to commercial use, the three original classifications of engineering have subdivided until we now have a score of recognized branches, each branch specializing in its own field, and in addition to these universally recognized branches, the basic industries now recognize lines of engineering that are in reality made up of two or more of what we might call the standard lines, for the purpose of specializing on the entire detail of their own special requirements.

The so-called pulp and paper mill engineer can be included in this latter class. Pulp and Paper Making is today one of the basic industries. Its mills can be found in all parts of the civilized world, and while there is an ever increasing demand for paper and its products, competition is becoming stronger and stronger, demanding constantly improved equipment and methods of operation, combined with increased volume of production. Such improvement demands that the installation be carefully planned throughout, the equipment selected and installed so that operation can be carried on with a minimum of maintenance and attending labor, and buildings so laid out and constructed that they will be efficient and permanent, and that the several departments entering into the completed unit be properly balanced that operating costs can be kept at a minimum, from the preparation of the raw product to the shipment of the finished sheet.

Pulp and Paper Mill Engineers can play a most important part in the development of a modern paper mill. The development of a complete paper mill unit, especially if it be of large production, is an extremely important undertaking. The location of the proposed development is often in yet undeveloped country where the limits of location are of wide range, water power of considerable volume must be developed, to fill the power demand, of which a considerable part must be electric energy; a steam boiler plant must be a part of the completed unit, and the paper mill itself together with Groundwood and Sulphite Mills complete the major part of the complete unit. In addition, the handling of raw products is a most important factor, and modern equipment for conveying, sawing and preparing the wood supply, handling and conveying coal, sulphur and limestone, and the handling, storing and shipping of finished product must all be included. The investment for such a plant runs into millions of dollars, and the installation is unlike that of any other industry, the paper mill equipment itself being to a great degree special, and the many different operations each requiring its own special complement of buildings and equipment, and yet each operation must combine efficiently with its neighbor, so that the complete process may be uniform and uninterrupted throughout.

Compared with the total number of pulp and paper making plants of the industry, complete units as before described are, of course, few. We find a groundwood mill here, a sulphite mill there, and the paper mill, or conversion plant as it might be called, in almost every section of the country. Soda and sulphate pulp mills are numerous in locations where the wood supply is favorable, and board mills are common to more thickly populated centers where their main raw product, old papers, is closely at hand. Each one of these separate mills, however, has its special problems from the time of its inception to its completion, and, for that matter, as long as it may operate. The magnitude of these problems is, in the majority of installations in proportion to their size, demanding a corresponding degree of experience and knowledge on the part of those retained to solve them.

As in any creation that is first conceived in the brain and then constructed by the body, the old saying "A good start makes a good ending" is applicable, but it is especially adaptable in an industrial installation, the layout of which is really a most important factor and may, if properly made up, insure the success of the undertaking, and in turn if hastily drawn up, through either lack of experience or knowledge, or through what is most common, lack of time, may show faults that if followed will detract from the success of the undertaking throughout its entire future. A poor layout is often discovered, but this discovery comes at such a late date that it is either necessary to proceed, knowing that what is being done is not as it should be, or requiring radical changes that add greatly to the expenditure and the date set for completion, which is often a vital factor.

Those responsible for the layout must have to the greatest degree experience and knowledge of the completed installation. They must see clearly in their minds the completed mill in operation. They must also see clearly and allow for extensions to each department for future enlargement of the development, for it is the future of any undertaking that determines whether it be a success or a failure, and without the future requirements as well as the requirements of the immediate development in mind, a layout that proves to be a success is accidental, and those responsible for it should rest on their laurels, and take no chance of repetition.

To hold clearly in mind a completed installation especially of the magnitude of the modern paper mill unit, at the time of its inception, it can be clearly seen that training is required. This training must be made up of, first, and perhaps the most important, experience in the requirements of this special work, including a complete knowledge of each process that is to be carried out. This training must include structural knowledge for the special structures themselves, mechanical training for the special equipment and steam requirements, and electrical training for electrical demands that are becoming more and more important in the modern practice of complete electrification. In other words the one to meet such demands must be an engineer trained in those departments that are included in this special pulp and paper mill work, and in addition to his engineering training, he must be familiar with each process of operation. An engineer, with engineering training only, while he might carry out any part of the design and installation, could not put together a design that would insure efficient operation without a complete understanding of the operation itself, and the man who has specialized in this work can rightly call himself a pulp and paper "Operating Engineer."

Those responsible for the carrying out of any industrial development would be characterized as exceedingly poor executives should they fail to insure their workmen and all parts of their structures during their construction and thereafter. The selection of engineers trained in their special work is just as much a form of insurance as that representing fire, workman's risk, or occupancy, for from the commencement of preliminary work such as surveys, accumulation of power data, location of railroad spurs, transmission lines, and the many other details leading up to the actual selection of site and final layout, the trained pulp and paper engineer carries the future always in mind and each act performed is subconsciously valued in terms of tons per day output of the finished plant.

The preliminary work while often thought of as a somewhat needless expenditure of time and money, is in reality of great importance, as it is the actual recording of the physical conditions on which depends the location of all parts of the development, the amount of power available, and characteristics of the entire power installation, the design of foundations, and many other such details. In fact in a number of instances carefully executed preliminary work has prevented extensive delays and large expenditures, by showing clearly in advance the action necessary to overcome certain abnormal conditions, that otherwise would have remained unknown until actually encountered in the progress of the work, and it is this encountering of the unusual in any undertaking, whether large or small, that plays havoc with the entire development no matter how carefully the work has been laid out. Too much preliminary work is far better than not enough, and the true paper mill engineer realizing that both his future and that of the development may depend on preparedness, is often thought either too conscientious or simply putting in time, when a certain period elapses without an actual sign of real progress.

The layout is the last step of the preliminary work, and is an assembly showing the outlines of the completed development, each structure or part thereof in relation to its neighbor, and as the greatest care is taken in the selection of the seed to insure the future of any form of life, or in the making of a pattern from which the completed work is to be fashioned, so should the greatest care be taken in the forming of the layout, as it is the seed from which the completed plant must grow, first foundations, then superstructures, then equipment and finally the completed whole. The layout is the commencement, and if in it is incorporated an arrangement that has taken into consideration all future requirements, the real detail, that is the bulk of the work as regards time and numbers engaged is greatly simplified, the many different structures being detailed, either the whole or a part at a time, this work expanding steadily until at completion the one or two layout drawings have grown into a number of finished working drawings, the actual number depending on the extent of the development. While on many of these drawings the major part of the design is one of structural problems only, there must be ever present in the mind of the engineer the primary object of the structure he is planning, viz, a part of a pulp and paper mill. The design must first, therefore, be arranged for the most efficient installation of equipment, and operation thereof, and structural details then perfected for this arrangement.

If the design be carried out without this primary object in view, the result while it may be structurally perfect, will in the majority of cases show evidence that a true realization of the purposes for which the buildings were intended was lacking. Equipment is cramped in one place and extended in another, extra labor is demanded due to special handling of product that should have been avoided, costs in one department or another are exceedingly high due to lack of balance, power demand is either excessive or output lacking to fill a legitimate demand, and if such conditions occur it is generally found true that a considerable period was expended in putting this development into operation, with the always present feeling of dissatisfaction on the part of the owners and discouragement on the part of the operators. Such conditions are rarely found where the work is carried out by experienced pulp and paper mill engineers, as it is a part of their everyday routine to see that such conditions are avoided, and that an efficient operating installation is turned over at the completion of their work.

While careful office and detail work, both on preliminary requirements as well as on the future work, should insure a well planned installation, the actual construction of the development, if improperly carried out may go a long ways to offset the most carefully prepared design, and among other requirements of the pulp and paper mill engineer must therefore be the ability to properly supervise the actual construction work. If the plans of the work are complete to the last detail, a supervising engineer without previous paper mill experience, provided his general experience is extensive, can, by following drawings closely, insure proper results. A supervising engineer, however, who has gained his experience in pulp and paper mill work is in command of the situation much more thoroughly. He knows where to do the work, and what work is to be done, to the best advantage, and has at his finger tips all the little tricks of the trade, so to speak, that go to insure a quick and accurate installation, whether it be the setting of a plate here or an anchor bolt for some piece of special equipment there, and supervision of construction on his own special installation is a necessary part of the pulp and paper mill engineer's training.

The reader will no doubt realize by this time that the pulp and paper mill engineer, as described to some extent, represents in actual practice an organization, the members of which, while being familiar with the entire requirements, specialize on one or more parts thereof, and if this organization is properly balanced, we have a unit experienced in the entire detail that has been characterized in this article as the "Paper Mill Engineer." Such an organization is equipped to handle the smallest detail as well as those required to complete a maximum development. The demand made upon it is in direct proportion to the volume of the requirements, and the expense to the one making the demand will be in similar proportion. This is a true statement, and may to some extent offset the general impression, namely; that the expense would be far greater in proportion for a small job than it would be for large work, therefore the common saying "in any case I will do the small work myself".

There is no doubt that engineering costs money, and because it does cost money it is often dispensed with entirely, or only those requirements covered that are absolutely necessary. While engineering costs money, it is not expensive, in fact the nominal expenditure required is in many undertakings returned many times over through the care exercised in carrying out each part of the work in a minimum of time and of expenditure, and the commencement of operation at the time set. The plant that through delays here and there sets forward the time of completion, and through something missing here and through changes required there, must spend a much longer period than necessary in producing a salable product, finds when it is too late that there has been expended many times the fee that would have secured a competent engineer, specializing in this work, who would have carried it through to completion and turned it over as an operating unit. The cost of such engineering service, is in comparison with the investment, a very small proportion, and in these days of constantly improved methods of design and operation, no industry can afford to carry out even their small undertakings without engineering experience, specialized in its own particular industry.

MUST MAKE ONTARIO TIMBER A CROP.

In speaking at a mass meeting of citizens at Cochrane recently, Premier Drury said:

The North Country has tremendous possibilities. The Government can do much, but it cannot do everything. It must have the co-operation of the people. We have here immense agricultural possibilities, but we have also great forests, and huge areas which are not suited to agriculture, but which are well suited to the growing of forests. The real prosperity of the north must depend absolutely on the permanency of her forests. Great as agriculture will come to be, the base of northern prosperity must be used as a periodical crop and harvested so as not to interfere with the growing crops. That means fire protection, which in turn means that the Government must have absolute co-operation on the part of the settlers and of the large industries.

Speaking of the extension of the T. & N. O. he said that it was a sound business proposition. The railroad would open up large agricultural areas and large pulp wood areas, and there was every prospect of the development of valuable mining properties. The Government wished the railroad to be self-contained and self-supporting, and from the results of the building of the railroad from North Bay to Cochrane the Government was absolutely convinced that the road from Cochrane north to James Bay would round out the system to make it self-supporting and at the same time to the greatest feature in the opening up and development of the great north country. He saw room for two pulp mills, perhaps three, with absolutely certain agricultural prosperity, and a possible large development of mining areas. He suggested also that the development of the North had reached a period where further steps would have to be taken and hinted that with a population of a hundred thousand between Cobalt and Cochrane, the time was very close at hand when county organization—at least in the stretches along the railway, would have to be considered. This, however, was a matter for the people themselves.

H. E. HOWE SUCCEEDS C. H. HERTY ON J.I.E.C.

New York, Nov. 7th. Mr. Harrison E Howe, it was announced to-day, has been elected to succeed Dr. Charles H. Herty as editor of the Journal of Industrial and Engineering Chemistry and director of the A.C.S. News Service, which are conducted by the American Chemical Society. Dr. Charles L. Parsons, of Washington, secretary of the Society, stated that Mr. Howe had accepted both positions.

Mr. Howe, who is a well-known industrial chemist, was born in Georgetown, Kentucky. He was graduated from Earlham College, Richmond, Indiana, with the degree of Bachelor of Science. He was a graduate student of the University of Michigan and became a Master of Science at the University of Rochester. As chief chemist of the Sanilac Sugar Refining Company, in like capacity with the Bausch and Lomb Optical Company of Rochester, New York, and as manager of the commercial department of A. D. Little, Incorporated, of Boston, and Manager of the Montreal offices of that organization, he became familiar with the broadest phases of industrial chemistry. In the World War he was consulting chemist of the Nitrate Division of the Ordnance Bureau of the United States Army. Until his election to his present position Mr. Howe was at the head of the Division of Research Extension of the National Research Council. The new editor writes extensively for magazines on applied chemistry and has done notable work in the popularization of science. He is the author of a recently published popular work, "The New Stone Age."

Dr. Herty resigned the editorship to which Mr. Howe succeeds, to accept the presidency of the newly formed Synthetic Organic Chemical Manufacturers

Dr. Herty resigned the editorship to which Mr. Howe succeeds to accept the presidency of the newly formed Synthetic Organic Chemical Manufacturers Association of the United States, which to-day opened offices on the 34th floor of the Metropolitan Tower at No. 1 Madison Avenue. Dr. Herty's career in chemical journalism has been varied by many public activities. By special appointment of President Wilson he went to Paris in 1919 as the representative of the United States in the matter of the distribution of German dyestuffs under the economic clauses of the Peace Treaty. Dr. Herty was also chairman of the Committee of the American Chemical Society advisory to the Chemical Warfare Service, member of the Dye Advisory Committee of the Department of State, and Chairman of the Advisory Committee of the National Exposition of Chemical Industries. Before beginning his public work, Dr. Herty had been a professor in chemistry both at the University of Georgia and at the University of North Carolina. In his new position he will devote himself to the development of American synthetic organic chemical industry.

Judge not thy neighbour until thou art in his situation.

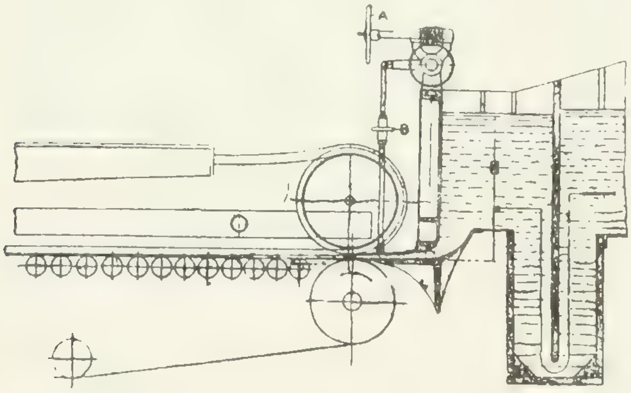
A NEW TYPE OF PAPERMACHINE FLOW BOX.

(Translated for the Pulp & Paper Magazine from La Papeterie, **42**, 72, January 25, 1920, by A.P.-C.)

As a rule, stock is made to pass from the flow box of the papermachine to the wire over an apron, the amount of flow being regulated by the slices, the functions of which are to hold back the foam and to ensure a uniform thickness of stock over the whole width of the wire. One end of the apron is attached to the frame and to the flow box, while the other rests on the wire over the breast roll against which it continually presses owing to its own weight and the weight of the stock flowing over it. As the wire travels at a high speed, the apron is subject to considerable wear. Moreover, a felt or oilcloth joint must be provided between the frame and each side of the apron, which increase the wear on the wire, unless they be very carefully made, and which must be changed each time the wire is changed.

With the above-mentioned style of flow box, in which the height of the stock is relatively small, the stock cannot flow past the slices at more than 100 to 130 m. per minute (about 333 to 433 ft. per minute), so that in the case of machine working much faster than this the speed of the wire is greater than that of the stock, which prevents proper felting of the fibers. To overcome this difficulty the Eibel-Martin patent provides for a rather considerable inclination of the wire towards the wet presses, and as the inclination must vary according to the speed, the height of the end of the wire must be adjustable.

The J. M. Voith Company, of Heidenheim (Germany) has devised the flow box shown in the cut. It completely eliminates the apron and slices, and the machine can be run at a high speed without giving the wire any great slope. It has already given satisfactory results under actual service conditions.



The stock is delivered through a nozzle which slides out of the flow box and is absolutely independent of the wire, the only parts resting on the latter being the deckle-straps. The height of the partition in the flow box can be very easily adjusted, thereby adapting the rate of flow of the stock to the speed of the wire, so that it is unnecessary to change the slope of the latter while the machine is running.

A further advantage of the new box is that the thickness of stock flowing through the nozzle can be adjusted by means of 10 or 20 levers B, spaced along the whole width of the sheet.

The bronze cross-piece which in most machines is placed between the breast roll and the first table roll is also done away with, thereby eliminating a further source of wear on the wire. By suppressing the slices, the formation of air bubbles and foam spots on the wire is prevented. Thus the output of the machine is improved as regards both quantity and quality.

LOOKING AHEAD.

(By Col J. D. DENNIS, of the Canadian Pacific Ry.)

Canada's economic future, both immediate and remote, depends entirely upon a healthy and adequate introduction of people and capital—people to accomplish the settlement of vast tracts of virgin agricultural land, capital to make possible a corresponding industrial development. In the sure, steady flow of these two tributary streams lies Canada's hope of greatness. It is the absolute fundamental growth to equality of national status. The Dominion now stands where stood the United States a century ago. Given a sane, sound immigration policy and the promised continuation of the flow of foreign capital to exploit her natural resources and build up her industries, her future is mirrored in the century's history of the United States development.

Industrially Canada is prospering. The total United States investment in Canada at present is estimated at about $1,600,000,000, and that of Great Britain approximately double this. The war, which tended to keep British capital at home, offered particularly advantageous conditions to United States investment, so that while the flow of capital from overseas almost ceased and is still sluggish, the effect of its withdrawal is being counteracted by the influx of United States moneys. The are some 500 branch factories of United States firms in Canada at present, of which more than 300 have been established since the war, an example of the evil of a depreciated currency working for the benefit of the Dominion. This has awakened United States manufacturers to the many other advantages of locating in Canada, so that even should the exchange situation become righted in the near future, there is no danger of Canada losing favor with United States manufacturers. The future, I think, is really bright for Canadian industry.

Never were immigration prospects brighter or eyes turned more favorably or in greater numbers upon Canada as a haven from congestion and overcrowding and the war weariness and hopelessness of outlook the conflict has left in its wake for many countries. War conditions achieved a virtual class revolution. There is a new aristocracy of wealth. The incomed middle class and those of small private means now find their salaries inadequate and their means no longer accomplishing independence. They are looking to new lands, to fresher and larger possibilities for their energies and their wealth. Statistics indicate that Canada is the most favored goal. Canada is also taking her toll of the United States, though that country probably never notices it except through its immigration figures. The best are coming, the experienced, capitalized farmers, and the shoals of inquiries received at any of our bureaus indicate how increasingly popular Canada, with her cheap lands and free homesteads, is becoming.

A sane immigration policy, with an open door limiting entry only by desirability, with a steady proportionate development of our natural resources and the building up of industry, will, I think, solve all Canada's economic problems, and not only alleviate the present situation, which is not as bad as many paint it, but will build up our nations to proportions few dream of.—Financial Post.

Preferential Tariffs Applicable to Imports from Canada

By WILLIAM GILCHRIST,
Chief Foreign Tariffs Division, Commercial
Intelligence Branch, in the Weekly
Bulletin of the Department of
Trade and Commerce.

The last year and a half has been marked by several events of importance in respect of preferential tariff arrangements within the British Empire. Of especial interest to Canada is the West Indies trade agreement, formally proclaimed as having come into force in nearly all the colonies on the first of September. As the result of the Canada-West Indies conference held in June, 1920, Jamaica, the Bahamas and British Honduras were brought for the first time into reciprocal tariff relations with Canada. Those West Indian colonies which were in the trade agreement of 1912 sent to the conference delegates favouring larger preferences under the new pact and this principle was carried out. Looking over the other parts of the world, Cyprus and Samoa are found to have joined the list of colonies which have differential import duties affording Canada a tariff advantage over foreign countries. The United Kingdom under one part of the Safeguarding or Industries Act gave preferential treatment to goods of Empire origin. In addition to the mother country and the colonies mentioned, New Zealand, South Africa and Rhodhesia have preferential tariffs applicable to imports from Canada.*

The advantages which Canada enjoys in the various British markets in consequence of Imperial preferences are surveyed in this article. The usual condition for obtaining the British preference is that at least 25 per cent of the value of the imported goods be derived from labour in a country entitled to preferential treatment.

United Kingdom.

A comparatively recent development of the scheme of Imperial tariff preferences is the coming into operation, this month, in the United Kingdom, of part I of the Safeguarding of Industries Act imposing duties on certain foreign goods while exempting Empire products. Britain had been already giving a tariff preference on nearly all her dutiable imports. The new measure is indicative of further approval of the principle of Imperial preference. It happens that the majority of articles made dutiable under the new customs law, relatively speaking, are not of great industrial importance to Canada. Most benefit is likely to be derived from the duty imposed on certain chemicals of foreign origin. Other articles on which the new measure imposes a duty are optical instruments, scientific glassware, laboratory porcelain, balances and measuring instruments of precision, ignition magnetos, arc lamp carbons, wireless valves and similar rectifiers, vacuum tubes, hosiery latch needles, and tungsten. Goods covered by the Safeguarding of Industries Act are dutiable at 33 1/3 per cent ad valorem when imported from a foreign country, and are free when of Empire origin.

Compared with most tariffs of the world the dutiable list of the United Kingdom is small. In the regular tariff the goods subject to ad valorem duties are clocks, watches, motor cars (exclusive of trucks, etc.), musical instruments, and accessory parts of any of these articles except rubber tires which are free of duty. On these goods and on certain wines and cinematograph films a preferential tariff, one-third lower than the rates leviable on goods of foreign origin, has been in effect since 1919. The general ad valorem tariff, applicable to foreign origin, has been in effect since 1919. The general ad valorem tariff, applicable to foreign countries, is 33 1/3 per cent, so that the rate to Canada and other parts of the Empire on articles subject to ad valorem duties is 22 2/9 per cent. On sugar, various articles containing sugar, preserved fruits condensed milk, if sweetened, tobacco, cigars, cigarettes, tea, chicory, coffee, cocoa and preparations of cocoa, and some other goods, all subject to specific rates of duty, Canada and other parts of the Empire have a preferential tariff one-sixth lower than the tariff on goods of foreign origin. Certain preferences are also allowed on spirits and wines. On a few dutiable articles, including matches and playing cards, there is no preference.

British West Indies, British Guiana, British Honduras.

One by one, the West Indian colonies, which ratified the Canada-West Indies trade agreement of 1920, have been adopting new customs ordinances granting tariff preferences to imports from Canada, the United Kingdom, and in most instances, other parts of the British Empire. Thirteen of these colonies now have the new preferential tariffs in operation.

The agreement provided for certain reductions from the West Indies general tariff on nearly all merchandise and produce imported from Canada. The reductions specified for the several colonies were to be not less than the following percentages: Bahama Islands, 10 per cent; Barbados, 50 per cent; Bermuda, 25 per cent; British Guiana, 50 per cent; British Honduras, 33 1/3 per cent; Jamaica, 25 per cent; Leeward Islands, 33 1/3 per cent; Trinidad, 50 per cent; Windward Islands, 33 1/3 per cent. The agreement failed to receive the necessary ratification by the Bermuda House of Assembly. All the other colonies have approved the pact and with the exception of Jamaica have put the new preferences into operation. Tariff revision was to be dealt with by the Legislative Council of Jamaica in October or November. Independent of the 1920 agreement, Jamaica has a preferential rate, applicable to Canada for certain cotton piece-goods. The rate of foreign cotton piece-goods is 16 2/3 per cent ad valorem. The preferential rate is 10 per cent and there is a still lower rate of 8 1/3 per cent, when the goods are made entirely from cotton grown within the Empire.

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* The Australian Parliament has before it a measure containing special provisions for negotiating preferential tariff arrangements with other British Dominions. It is expected that this legislation will be enacted at an early date.

Note.—Specific duties are duties based on number or quantity, such as $2 each or 5 cents per pound; ad valorem duties are levied on the value of goods, as 10 per cent; n.o.p. means not otherwise provided for.

When the time came to revise its tariff in accordance with the agreement the Bahamas made the preference 25 per cent although 10 per cent would have fulfilled its obligation. British Honduras, in August last, raised its general ad valorem rate on foreign goods, from 15 per cent to 20 per cent, the result of which was to provide on many items a preference of 50 per cent on goods of Empire origin.

In the Bahamas, preferences are not necessarily applicable to wines, malt liquors, spirits, spirituous liquors, liquid medicines and articles containing alcohol. The colonies are not required to give preference on tobacco, cigars or cigarettes but nearly all of them have adopted differential duties on these articles favouring Empire goods. Except in the case of the Bahamas certain preferences are specified for alcohol spirits, wine, beer and ale. In all the colonies the preference on flour was to be not less than one shilling per 196 pounds. In some cases a more substantial preference has been accorded. In this respect British Honduras went furthest, making the preference on wheaten flour when imported direct $1 per 196 pounds.

Goods are not exhaustively classified in the West Indian tariffs. The item covering unenumerated goods in any tariff is therefore of much importance. Furthermore, the rate on unenumerated goods is usually the prevailing rate applicable to all goods subject to ad valorem duties. On this account the approximate levels of the different tariffs are not difficult to indicate and an idea can be given of the absolute value of the preferences which have so far been described only as percentage reductions from the rates leviable on foreign goods. The subjoined table shows the actual differential on the bulk of articles subject to ad valorem duties in the different colonies:—

	Preferential Tariff		General Tariff	
The Bahamas	9⅜	per cent	12½	per cent
Barbados.	10	"	20	"
British Guiana. . .	11	"	22	"
British Honduras .	10	"	20	"
Trinidad	10	"	20	"
Grenada	10	"	15	"
St. Lucia	10	"	15	"
St. Vincent	10	"	15	"
Antigua	10	"	15	"
Montserrat . . .	10	"	15	"
St. Kitts Nevis	10	"	15	"
Dominica	. . . .		. . . .	
Virgin Islands . .	. . . .		. . . .	

Important articles, including many kinds of foodstuffs, animals, lumber, and other commodities, are subject to specific duties, and such goods are not covered by the rates quoted in the above table.

New Zealand.

New Zealand, since 1903, accords Canada and other parts of the British Empire a preference on most of its dutiable imports. The preference is variable. Probably the most common rates are 30 per cent under the general tariff and 20 per cent under the preferential tariff. These are the respective duties applicable to hardware and ironmongery n.o.p., saddlery and harness, leather goods n.o.p., most kinds of textile goods except clothing, preserved meats, preserved vegetables, lard and provisions n.o.p., glassware, firebricks, drainage pipes, lamps n.o.p., fancy goods, toys, athletic requisites n.o.p., musical instruments, fishing tackle, cardboard n.o.p., cordage and twine n.op. tents, and some other articles. Then there is a higher scale of duties. Wearing apparel n.o.p., hats, hosiery n.o.p. toilet preparations n.o.p., calendars and showcards, cardboard or paper boxes, paper bags n.o.p., account books and many similar kinds of manufactured stationery, tinware, galvanized iron manufactures n.o.p. brooms and brushes, furniture n.o.p., preserved milk or cream, soap n.o.p., trunks and travelling bags are all dutiable at 37½ per cent ad valorem, when of foreign origin, while Canada has a rate of 25 per cent ad valorem. On some other goods the respective duties are 33¾ per cent and 22½ per cent.

Printing paper is free when imported from Canada, but 20 per cent when of foreign origin. Other articles in this latter category are certain box papers, cheese cloth, iron boiler plates, wrought pipes, iron and steel cordage, and plain iron in several forms. The Empire free list also includes a variety of goods subject to 10 per cent ad valorem when imported from a foreign country. Motor vehicles are 20 per cent general and 10 per cent preferential tariff.

The New Zealand tariff is applicable to Cook islands.

Samoa.

In April, 1920, the New Zealand Government issued a customs order providing for a new preferential tariff in Samoa, a mandated territory. The general tariff of Samoa on nearly all goods is 22½ per cent. There is a British preferential tariff of 15 per cent, which is applicable to imports from Canada. Tobaccos, only, are excluded from the preference in Samoa, and there is a short list of articles exempt from duty.

South Africa.

According to the official Year Book of the Union of South Africa, preferential duties were in effect a century ago in Cape Colony. It is stated that from 1821 to 1830 the duty was approximately 3 per cent ad valorem on British goods and 10 per cent on foreign goods and those imported from the East. However, in 1865 the early differential rates were abolished and from that time until 1903 customs duties were levied equally on all goods irrespective of origin. In 1903 British preferential rebates were authorized and they have been continued. On most goods this rebate consists of 3 per cent ad valorem. The full rate to foreign countries in many cases is only 3 per cent, and in these circumstances imports from Canada or other reciprocating British countries are free of duty. On nineteen items the rate on foreign goods is 25 per cent ad valorem, with a corresponding rate of 22 per cent under the preferential tariff. The classification of goods is not very exhaustive in the South African tariff, so that the item covering unenumerated articles has a wide application. The duties under this heading are 20 per cent general and 17 per cent preferential . On a considerable list subject to specific duties the preferences vary considerably. The articles classified under some fifty items are free of duty, regardless of origin, and on these goods there is, of course, no preference.

Rhodesia.

Northern and Southern Rhodesia are included in the South African Customs Union and have a tariff similar in many respects to that of South Africa. However, that part of Northern Rhodesia known as the Congo Basin applies the same tariff to imports regardless of origin. In the other portion of Northern Rhodesia and in the whole of Southern Rhodesia imports from Canada come under a British preferential tariff which, in some respects, is more favourable than the tariff of South Africa. The preferential rebate, for example, on the item covering unenumerated goods is 11 per cent ad valorem.

Cyprus.

Cyprus in May, 1920, adopted a preferential rate for certain Empire products which one-third lower than the full rate. This list includes musical instruments, clocks, watches, cinematograph films, cotton yarns and piece-goods, soap, matches, woollen yarns and manufactures, furniture, haberdashery and millinery. The preferential tariff for unenumerated goods is one-sixth lower than the full rate, which is 10 per cent ad valorem. The preference is varied for wines and spirits.

News From Europe

The Quality of Norwegian News Print.

The question of the quality of news print from countries loosely written about as Scandinavia, resolves itself as things are into the question of fact. The fact, or facts, are that Swedish, Norwegian and Finnish prints recently contained many criticisms of the quality of news print from those countries, and, in addition, complaints that the paper was ill-packed and not "up to sample." Among other instances is one supplied by the Norwegian Consul General at Shanghai, who deplores in outspoken terms the injury which such criticisms do in these days of competition.—Norges Utenrikshandel.

Mr. Steele on Scandinavian News Print.

The following is a summary of two articles from Scandinavian papers which are the more interesting for the side light which they throw on a controversial question:

"Mr. G. F. Steele, the able director of the Canadian Export Paper Co. in Montreal recently visited, as is well known, Norway, Sweden and Finland to study the paper industry of these countries. He has given his opinions in interviews for various newspapers, and his impressions from the journey and we are in a position to relate some of his views. In the Montreal Gazette Mr. Steele uttered a warning against the destruction of forests in America, chiefly in the United States, but also in Canada. The forest administration in Scandinavia and Finland is described, and he suggested that it would be sound statesmanship to send an expedition of experts to Norway, Sweden and Finland to study with the aid of their experience the development of a plan for an expert supervision of forest resources in Quebec.

In the Financial Post, Toronto, Mr. Steele traced in detail the possibilities of future Canadian competition in European markets. Europe, said Mr. Steele, could offer very little export business for Canadian paper mills. The trade in newsprint could only continue, as before, with the United States, then South Africa, which offered great market possibilities, and Australia, which at the present time, is Canada's next best customer. It might seem that Canada could do business with England, but he thought not, as it would be premature for Canada to seek markets in England. Norway, Sweden and Finland supplied England for the most part with newsprint, while a portion came from other quarters, Germany and Belgium.

In a survey of the news print market in the Paper Trade Journal, there is a reference to the interviews with Mr. Steele, in which he is said to have spoken disparagingly of the quality of Scandinavian news print. These opinions, which were reprinted in many other American and Canadian sheets, excited comment in circles here, and the more so as Mr. Steele had come forward as the advocate of loyal competition, and as a pioneer for cooperation and reciprocal help between the makers of newsprint in different countries.

It seems, however, that, according to a later expression of opinion, Mr. Steele ascribed the whole affair to a misunderstanding and that the interviews were incorrectly quoted in the American Journal. Mr. Steele has further stated that his views were known in Norway, so that there should not be any misstatement on that ground. We shall therefore briefly recount the facts in their order.

In the above mentioned interview in the Paper Trade Journal Mr. Steele discussed a conference a short time before between representatives of the Canadian Export Paper Co., International Paper Co., and the chief news print consumers in the U.S.A. Mr. Steele pointed out among other things that "these publishers admitted the difficulty of obtaining newsprint, the unsatisfactory character of the European product and the preference for the Canadian. As for Europe being able to supply the shortage of news print, Mr. Steele said there was no chance of this." In direct connection with this conclusion, the folowing opinion of an official of one of the news print companies is given:

"One of the leading New York dailies purchased some 2,000 tons of European news print at a favorable rate and turned it into their daily run. It did not prove up. The quality was poor and varying, and possessed but little strength. Through breakages and other troubles, the newspaper was not able to complete its runs in time and lost heavily through non-fulfillment of circulation. When the experiment was over and costs were calculated, it was found that the paper had lost about $500 a ton." This concern will not experiment with any more European news print paper and it is understood that it has since renewed its contracts with one of the large producers in this continent. The news print man said that the quality of the Scandinavian news print would not in any case be better than it was before the war, and actually is of much inferior grade than the Canadian product. It will be expensive for publishers to attempt to change over from the strong Canadian material which they have been using for the past five years to the weaker and flabbier overseas product reported to be coming into the competitive market. He did not think that many American publishers would care for it once they began using it."

Recently Mr. Steele's attention was drawn to the matter and to the unfavorable impression which it produced in Norway and Sweden, and he wrote to the Paper Trade Journal as follows (May 26): Editor, Paper Trade Journal—While I was recently in Northern Europe, I was shown a letter from a paper importing house in which it was stated as follows: "The writer has just read an article from the Paper Trade Journal of December 23, written by Mr. George F. Steele, the Manager of the Canadian Export Paper Co., Ltd., which you know is practically the paper trust of Canada. I understand you receive issues of this journal, but quote you a portion of his communication, which reflects considerably on future news print business with Scandinavia."

The extract quoted is contained in the article in question and as you are aware I did not contribute an article on this subject nor was I the official of the

News Print Companies who commented on foreign news print paper.

I desire, therefore, in order to dispel the unpleasant impression brought about by the wholesale circulation of a pure fabrication, to announce that I have not criticised Scandinavian paper and am not in a position to do so. I have neither seen nor heard of any Scandinavian paper that was not of excellent quality and am not in the habit of attempting to bolster up my own business by running down the products of my competitors. I will be very glad if you will give this prominence in order to dispel the unpleasant impression made by false reports: Yours sincerely, George F. Steele, General Manager."

The transactions of Mr. Steele in paper all tell the story of the policy which he will follow—that Canada should seek to drive Scandinavia from their present markets in Europe. In that case these countries would look for new markets which Canada could enter and hold. What was his idea in sending paper to England when he was making Swedish and French competition in New York?

Another circumstance which should be noticed is that England's mills are striving to increase the production of news print so that it can satisfy the home market demand. — Pappers - Travern - Och Industritidskrift. Papir-Journalen.

Poisonous Action Of Wall Papers Containing Lead.

A case of poisoning of great interest to wall paper manufacturers, and, in a subject that has hardly been noticed if at all in treatises in industrial hygiene is reported from Hildesheim in Germany.

A family, consisting of father, grown son and daughter, manifested distinct symptoms of lead poisoning (blue line about the gums). As the illness was severe, not yielding to home treatment, the son and daughters were removed to the hospital, where they came under the care of Professor Becker, Medical Counsellor. In the hospital both patients improved without other treatment. On their return home, the same symptoms appeared in son and daughter, necessitating another stay in the hospital. The case was an enigma, since the source of the lead found in the body could not be discovered. An examination of household utensils was without result. It was then recalled that about three months before the living room and bedrooms of the family had been freshly papered and varnished. Accordingly samples of the wall paper and varnish were analyzed by an expert chemist. The result in respect to the varnish and water was negative, while in two samples of the wall papers considerable quantities of bichromate of lead were found, the samples being taken from the paper of the living room and the son's bedroom. In wall papers of the entrance hall and of the daughter's bedroom, on the contrary, no metallic poisons could be detected. It was also significant that during the winter the family often did not leave their rooms for days at a time and that the rooms were not aired sufficiently. After removal of the wall papers, cleaning and white washing a cure was gradually effected. A second examination of the wall papers in the experiment station of Hildesheim gave the following results: A square meter of the wall paper weighed 82.6 grams and contained 0.896 grams of lead and 0.2114 grams of chromium. The precise way in which the lead entered the system of these people was unexplained, though it was suggested that the most probable medium was the air of the rooms containing fine particles of the poison, or lead-dust as it is called, and in this connection poisoning from arsenical wall papers was recalled, in which cases the noxious substance was conveyed by the atmosphere. Papier-Markt. August 9, 1921.

CAREFUL LUMBERING.

The operators (under timber permits on Dominion forest reserves) are all conducting the timber operations more carefully. Stumps are cut low, trees are utilized as fully as possible, the brush is disposed of and the tracts operated are being left in good condition for protection against fire and for reproduction of the forest.—Annual Report, Director of Forestry, Ottawa.

Windigo Harbor. Transferring goods to Brown Corporation Camp. (Brown Bulletin.)

R. S. KELLOGG TALKS ON PAPER SHORTAGE.

"As in every other line of business, there have, of course, been suspensions and failures, of publishing ventures, but at the same time new publications of great variety are stated almost every year. On the whole there are more copies of publications available for the reader now than at any time during the past three years.

"There is no shortage of print paper anywhere in America and there was no real shortage last year," says R. S. Kellogg, Secretary of the News Print Service Bureau, with reference to a press statement of the New York College of Forestry entitled, "Suppression of the Press."

"The College of Forestry charges that the "Suppression of the Press" is in process of development, because of the failure of the people to recognize the importance of protecting and growing forests and the College lays great stress upon the shortage in print paper, which it says has already occurred.

"As a matter of fact," says Mr. Kellogg, "while there was an apparent shortage of newsprint paper at one period in 1920 there was no real shortage whatever, but simply a panic and fear of shortage caused by extraordinary consumption of paper the same as took place wit hsugar, coal, gasoline and other commodities. When the year was completed and it became possible to ascertain the actual facts, it was found that the newsprint manufacturers of North America had turned out 10 per cent more paper than in the previous year, while the publishers had increased their consumption only 5 per cent and that at the end of the year publishers had nearly 50 per cent more in their warehouses or in transit to them than they had at the beginning of the year.

"Newsprint paper is an article of remarkably steady consumption, because everyone who once acquires the habit of reading a daily paper maintains it steadily thereafter, unless reduced to absolute penury. For example, the statistics of the Post Office Department show that the circulation of the English language dailies in the United States which amounted to 26,715,000 copies for the 6 months ending September 30, 1919 increased to 28,113,000 copies as of March 31, 1920, to 28,232,000 copies as of September 30, 1920 and to 28,582,000 copies for the six months ending March 31, 1921.

"The great Post-Armistice boom of 1920 brought about only an increase of 5 percent in the consumption of newsprint paper over 1919, while on the other hand 1921 which marks the bottom of the industrial depression has shown a decrease of only 4 percent in standard newsprint consumption for the first 9 months of the year, compared with the first 9 months of 1920 when the use of newsprint paper was the greatest ever known.

"There has been no complaint of shortage of newsprint from any responsible source this year, and, as a matter of fact, the newsprint mills have been unable to operate to capacity because of the continual offering in this market of newsprint from overseas at prices, because of depreciated exchanges, which are below any possible cost of production in America.

"The New York State College of Forestry is to be commended for its championship of the cause and the need for better protection and development of our forest resources, but its statement would carry more weight were they based upon an accurate knowledge of present and prospective commercial conditions. The paper manufacturers of America have taken the lead among all the great industries in protecting their timber holdings from fire, in cutting them conservatively and in planting trees to furnish a future supply of pulpwood. In these undertakings they need and must have the cooperation of the public in fire prevention, in a revision of the tax laws so that the private owner can afford to hold land for the growing of a crop of timber and in studies to determine the silvicultural methods best adapted to various regions and species. Forestry cannot succeed unless it pays its way, and all that the newsprint paper manufacturer asks for is fair treatment for the timberland holdings, which are the source of his raw material and protection from the absolutely ruinous competition with his produce that is now taking place because of the fact that the German mark has almost reached the vanishing point."

Camp Windigo Headquarters of the gang that gets the wood for the mills at La Tuque (Brown Bulletin)

Waste in Box Board Mills

Waste means loss; waste means the loss of something which could be saved.

In box board mills the problem of waste prevention is a serious one needing continuous and careful attention from the fact that there are so many ways in which losses may occur.

The waste of time and material by careless and time-killing employes is one which may be corrected by efficient superintendents and foremen.

The waste of fuel in the power plant through imperfect combustion, low temperature feed water, or dirty boilers may be corrected by a diligent engineer.

The waste in radiation may be corrected by the proper covering of steam pipes and boilers.

The waste of power in the beater room can be lessened if the beater man can be educated to handle the rolls in the right way.

Waste heat from exhaust steam can be used for drying paper and heating the buildings.

The waste from trash received in paper stock (mixed paper) cannot be avoided.

The most serious source of loss in board mills and usually the one to which the least attention is paid is the waste water from the machines. I have seen sewers from paper mills lined their full length with valuable pulp and in places where they would overflow, the ground would be covered inches thick with it. The main idea seemed to be to get rid of it the quickest and easiest way; dump the vats, wash them out and let everything go to the river. I will say though that more attention has been paid to this loss in the last few years; ways of using this waste water have been devised, thereby saving what stock was in it.

Save-Alls.

Save-alls are being put into use; a fat friend of mine up in Wisconsin makes a very good one. It is every one's patriotic duty to save pulp wherever possible in in the mills, thereby conserving the fast diminishing supply of pulp wood. No matter how much money a mill is making, there is no excuse for wasting pulp. Save it all and put it back into paper.

The saving of waste water from the machines in any mill is not a very difficult or expensive job. The most efficient method that I have found and which I put into successful operation in a large box board mill was to drain or collect all waste water from the machines, stock pumps, screens, etc., in a central point (shallow well or sump) and deliver it by a centrifugal pump to a tank of large capacity, the beaters getting their water from this tank. There would be times when the beaters would not use all the water put into this tank, naturally causing it to overflow, which would mean some waste, but this overflow was taken care of by another tank from which a pipe led to the save-all, thereby saving it all. There were times when the save-all had nothing to do, but it was there and ready, like a good catcher, allowing no "passed balls."

By the above described arrangement the reclaimed pulp in the waste water is passed back to the beaters where it is mixed with fresh stock. The same disposition is made of stock reclaimed by the save-all.

Reclaimed water in the tank from which the beater room draws its supply can be easily kept hot by the proper arrangement of coils and the use of exhaust steam.

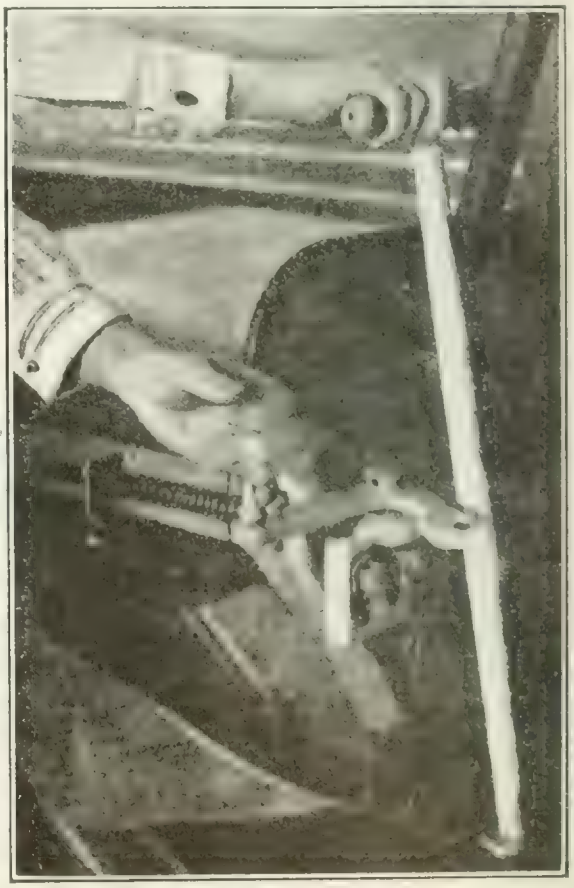
One of the objections to the use of a tank for waste water is that a large amount of stock settles there and must be emptied and washed out periodically. This, I believe, could be avoided by using a steel tank with a taper or hopper bottom, at least 60 deg. taper, with the outlet to the beater supply pipe at the lowest point. There could then be no settling, everything going to the beaters. The saving of pulp by this method is not the only saving; there is a saving of fresh water and water is a vital thing in some mills where the supply is limited.

The wastes in box board mills, though numerous are not difficult to correct if manager and superintendent notice them and insist on their correction. "A penny saved is a penny earned"; the same thing applies to dollars.

Every box board mill has its own separate waste problem; all are different. Some are easily corrected, while some are not so easy. None, however, is so difficult but with some ingenuity it can be solved. In putting up a new plant, this saving of waste water should be included in the plans, when it could be done with slight expense.

One rarely realizes what is being lost through waste water until the evidence is before him. I can well remember when I first saw the save-all put to work, and the amount of good stock which came from it. Then I reflected at the years we had been letting all this water go to the river in blessed ignorance of the dollars that were going with it.—The Paper Industry.

It looks as if the Germans are looking for a kink in their commercial plans because of the prospect that the Washington conference may result in the turning of the world's man power into producting good instead of ammunition.



He can't pinch his fingers with both hands on the handles where they must be.

British Trade News

(From Our London Correspondent.

London, Nov. 4, 1921.

Mr. R. J. Marx, B. Sc., is in charge of the Battersea Polytechnic engineering section for the purpose of advancing students in papermaking and it was through him that the recent film showing Canadian newsprint in process of manufacture was shown to the public. Mr. Marx should be a successful teacher, owing to the practical experience he has had in papermaking and machinery in England, Canada, and other places. He is now introducing the Elmendorf Tearing Tester into Great Britain.

Force Majeure Clause.

Who is the woodpulp man that has not heard of the Force Majeure clause? Well, it has been tested in an arbitration case in London between Korsnas Sagverks Aktiebolag and Craig & Sons, Ltd. Messrs. Craig bought through Erikson & Co., who are agents for Korsnas Sagverks Aktiebolag, 1,500 tons of No. 1 strong sulphite, shipment to be fairly spread during the navigation season of 1921. The deal was on the usual British Wood Pulp Association basis. But trouble arose. The was the big coal miners strike in England which closed the Moffat Mill and the Caldercruix mill, where the pulp was to be used, and sonsequently Messrs. Craig were hindered inmaking paper. They then claimed the privilege, under the Force Majeure clause, to cancel three-sevenths of the total quantity of 1,500 tons contracted for, or 643 tons. The sellers refused the cancellation on the ground that Messrs. Craig were only entitled to one-twelfth of the total quantity for each month they were shut down, namely 3-twelfths, or 375 tons all told. The legal questions then arose: (1) what was the interpretation of the Force Majeure clause; (2) what quantity of pulp should be cancelled? One Solicitor, one Barrister-at-Law, with a King's Counsel as Umpire, constituted in court. Both sides were represented by Counsel. They found that Messrs. Craig were at fault in refusing to take more than 857 tons of pulp under the contract and that they were bound to take, in the events which had happened, 937 tons of such pulp and no more. They were in default to the extent of 80 tons, being the difference between the 937 tons, which they ought to have taken, and the 857 tons, which they were prepared to take. Each side pays their own costs, but Messrs. Craig are to pay the costs of the arbitration, £88.

For the information of Canadians who have not had any dealings under the Force Majeure clause, I quote it for future reference: "The buyers or sellers may suspend deliveries under this contract pending any contingency beyond their control, which prevents or hinders the manufacture of paper or the manufacture of pulp, viz., the Act of God, war, strikes, lock-outs, drought, flood, accidents, total or partial fire, obstruction of navigation by ice at port of shipment, and loss and detention at sea or the like. The party affected shall give prompt notice to the other party of the cause and commencement of such suspension and also of when it ceases to have effect, and deliveries shall be resumed pro rata according to the production of the sellers or the consumption of the buyers. When such suspension shall have been continued for one calendar month the delivery for that period shall be cancelled unless otherwise agreed. For each succeeding period of one month the same course shall be taken. In the case of single cargoes or deliveries at longer intervals than one month, one-twelfth of a year's deliveries shall be cancelled for each month's suspension. In the event of the works of either buyer or seller being totally destroyed by fire and not rebuilt, this contract to be null and void." This is a most useful clause in a contract and the Craig Arbitration stoutly upholds it. Whoever the lawyer was, or the pulp or paper man, who originally drafted the clause, he deserves credit for common sense.

The Controller?

One daily sees references to the war time Controller of the British paper industry, and probably none are so interesting as the recent mild castigation administered by the London "Financial Times". It says: When, during the war, the paper controller was put into power and installed in a little office with a few clerks to take in hand the business of paper, he counted up the mills, took the Board of Trade returns, collected a few figures as to shipping, and fondly imagined that he had got a grasp of the paper trade. He was rudely brought to his senses by Lord Riddell, who by a simple process in calculation called his attention to the fact that there were 60,000,000 transactions every day of the week in Great Britain alone, involving the sale and purchase of paper. The whole of the legions of the bureaucrats combined into one great paper office could not possibly control any such volume of business. Something was to be said for the Paper Controller at that time, because, while the war was on, his duty was to restrict the trade in paper and make unemployment in order to find men for the Army. If the various experts now concerned with the curing of unemployment had been employed in 1915 in the business of recruiting there might have been some sense in the arrangement.

Paper Outlook.

There is still a dullness pervading the paper industry. Official reports say that employment is generally bad and that is my barometer. If trade is good there is plenty of work; if it is bad workers are idle. At all events official reports now state that mills are closed in certain places.

British Imports.

In my notes two weeks ago I made special reference to the difference between the imports and the exports of paper into the United Kingdom. Mr. Stanley Cousins, the well-known paper-maker, and Mr. W. C. Powers, have taken up the subject of written letters to the papers. This shows how thoroughly up-to-date Mr. Cousins is as a business-man; it shows his keenness— while others are asleep, he is alive and "doing". Mr. Cousins says it is essential to give wide publicity to the growing imports of paper and to emphasize the fact that those are steadily increasing at a time when British mills are suffering badly for want of orders. The pre-war imports were approximately 48,000 tons per month; today they are about 35,000 tons. He adds: "It will be obvious that the foreign mills are rapidly getting back to pre-war volume of business with Great Britain. It is equally obvious and unfortunately true, that British mills are running only one-third normal capacity, while the orders go abroad, largely to producing countries whose currency is heavily depreciated. If our British manufacturers can be aroused to this menace of increasing imports, and will realize the chief reason why home mills are shut down, we feel sure that the industry will be unanimous in its appeal to the Board of Trade for relief from this unfair competition. The paper manufacturers of Great Britain have a powerful case for a tariff against dumped goods and against imports from countries with debased currency. We have felt that the mills are not fully alive to the reasons for their present difficulties and to the remedies available. We feel certain that if the British mills grasp these facts they will realize the critical situation that the industry is in at present and will co-operate in quick and efficient action.''

No finer pronouncement has been issued from a paper man for some years and it bears out what I have written in the "Pulp and Paper Magazine" since 1912. The British papermaker wil put politics before business; they will say now: "Stanley Cousins wants Tariff Reform."

THE CASE FOR RAGS.

Out of the dust and mould
Just an old worn suit case
With its story—it came to unfold.

I had written to the storage warehouse to please forward it along with other left-behinds of home "paraphernalia."

It came, with its mouldy and torn exterior. The dented corner, and broken straps in dry pieces gave true witness to its age and the passing of time.

Its contents were purely personal; such things as we lay aside to keep because of a desire to preserve some memory in its freshness, also the usual odds and ends by way of records, receipts, letters, etc.

It alone, of all the pieces, escaped the vandalism which leaves its record by a touch of absence, resulting from indefinite and uncertain storage.

I opened its rusty lock on a quiet Sunday morning and began sorting it s contents to meet the wishes of my better half—lunch still found me at it. Into the working of systematic division many a memory had forced itself but, as I have said, it was purely personal, except for one outstanding fact—its contents were all paper. As a living exhibit of facts which are supposed to be without Life, it was a fine example.

The story told by the old bag fairly bristled with crisp, crackling paper, against a background of mealy, loggy, lifeless stuff, also paper.

The rags told—they lived their argument.

The other stuff had served but seven years or so and was mostly wreckage—cellar dampness, dust, dirt, mould and time had made it lifeless. The rag bond paper stood the test. Fortunately, the very messages I wished to preserve, with one exception, were written on this paper. The one I discorded was hard to tear. The others went into the waste witha musical rip!—rip!

As a moral let me add. Worthy messages are lost if they are carried on unworthy paper.

By the way, I've even thrown the bag away.
The Crest.

NEW COATING MILL.

Samuel Jones (Devonvale) Ltd., have started their new coating mill at Tillicoultry, in Scotland. Formerly the mill was used in the textile industry, but with some alterations it was soon converted into an ideal coating mill and the position is a good one, being close to the railroad and river Devon. It is estimated that the capacity of the plant is equal to 3,000 reams, 20 inches by 30 inches, a week. The firm is a "go-ahead"

GENERAL CHEMICALS.

Current Wholesale Prices in New York Market.
Week of 2 November, 1921.

		Carlots	Less Carlots
ACID, Acetic, 56 per	100 lbs.	[illegible]	6.50-7.00
Glacial 99½ per carboys		[illegible]	11.25-11.50
" Hydrochloric	100 lbs.	1.25-1.50	1.60-1.75
Sulphuric 66 deg. drums	ton.	21.00-22.00	22.50-23.00
ALCOHOL, Ethyl	gal.	....-....	4.50-5.00
" Methyl (see Methanol)		....-....	....-....
" denatured, 188 proof	gal.	....-....	.37-.38
ALUMINUM Sulphate, commerc.	lb.	.01¾-.02	.02¼-.02½
Sulphate iron free ..	lb.	.02½-.02¾	.03-.03½
AMMONIUM Chloride granular (white salammoniac) . ..	lb.	.07-.07¼	.07½-.07¾
(grey salammoniac)	lb.	.07¼-.07½	.07¾-.08½
BARIUM Sulphate (prec.) (blanc fixe)	lb.	.04-.04½	.04½-.05
BLEACHING Powder (calcium hypochlorite)	100 lbs.	2.35-2.40	2.50-3.25
CHLORINE, gas, liquid cylinders (100 lbs.)	lb.	.08-.09	.09½-.10
GLYCERINE, C.P., drums extra	lb.	....-....	.14-.15
LITHARGE	lb.	.07½-.08	.08¼-.09
METHANOL, 95 per cent	gal.	....-....	.66-.68
POTASSIUM Bichromate	lb.	.10¼-.11	.11¼-.11½
" Hydroxide (caustic potash)	lb.	.06-.06¼	.06½-.08
" Prussiate, yellow	lb.	.20-.20½	.21-.22
SALT CAKE (bulk)	ton	....-....	20.00-22.00
SODA ASH, Light	100 lbs.	2.10-2.15	2.20-2.60
" " Dense	100 lbs.	2.35-2.40	2.45-2.70
SODIUM Borate (borax)	lb.	.05½-.06	.06½-.07
" Carbonate (sal. soda) ..	100 lbs.	1.75-1.90	2.00-2.25
" Hydroxide (caustic soda)	100 lbs.	4.10-4.15	4.20-4.75
" Prussiate, yellow	lb.	.14½-.14¾	.15-.15½
SULPHUR, Crude	ton	18.00-20.00	....-....
" Dioxide, liquid, cylinders extra	lb.	.08-.08½	.09-.10
ZINC OXIDE, XX	lb.	.07-.07¾	.08-.09

During the past week the chemical industry was active — orders reaching the market in good volume. It is reported that some of the largest alkali plants have reduced their overhead, and are working at capacity.

It is thought the New Year will find the chemical industry on a stronger footing than at any time since slump in business.

Solid caustic soda is attracting attention at $4.10 per hundred pounds, and large dealers were not inclined to quote beneath this figure at any time during the week.

New Showrooms of the Diamond State Fibre Company of Canada, Limited, at 235 Carlaw Avenue, Toronto, displaying a full line of their varied products, amongst which will be seen electrical parts, automotive parts, trunks, roving cans, waste baskets, gears, lamp fittings.

PULP AND PAPER NEWS

The sriking printers of Toronto have, for long, been attempting to convince the Methodist denomination with the righteousness of their cause and the injustice of that of the employers. There are many reasons why they have made a special "dead set," so to speak, at this particular denomination. For one thing, among leading Toronto Methodists are a large number of keen social and moral reformers who, while very wealthy men themselves, have been noted for their advocacy of "social justice" for the workers. Then Mr. James Simpson, the well-known Socialist, who has made the cause of the strikers in the present contest peculiarly his own, is a prominent Methodist. Finally, the steward of the Methodist Bookroom, the Rev. Dr. S. W. Fallis, is also the chairman of the employers' organisation; and the strikers, no doubt, felt that, if they could bring Methodist pressure to bear on him, it might conceivably break the steady resistance which the employers have hitherto offered to what they feel to be inequitable demands, in the matter of the forty-four hour week and cognate questions.

But it now looks as though the striking printers have altogether failed to make an impression on the influential circles of Canadian Methodism. Last Thursday, the Board of Evangelism and Social Service of the Methodist Church in Canada, adopted a carefully-worded resolution, outlining the attitude of the Methodist Church towards the present printers' strike. The resolution definitely declined to engage in dogmatic statement on technical matters, such as wages or hours suited to particular industries. It heartily confided in the Methodist Bookroom and its Steward, and it declared "that no industry should be subject to arbitrary dictation, either by the owner of the plant or by the men who operate it." The resolution reaffirmed the Board's faith in the principle of collective bargaining and in the right of Labor to organize, and expressed readiness to strengthen the bonds of the Steward in every effort made for a generous settlement and deplored the fact that a deadlock had developed. The resolution was a very lengthy one, and, as has been said, was worded with care. But, read as a whole, it distinctly conveys the idea that Capital has its rights as well as Labor, and that both must be respected.

The annual convention of the Association of Canadian Advertisers was held in Toronto last Thursday and Friday. At a special luncheon for the delegates, who are representative of the larger national advertisers. Mr. W. N. Bayless, of Cleveland, Ohio, spoke very interestingly on sales promotion in the relation to advertising activities. He pointed out the need for intensive research, and of a close study of facts for use in systematic and efficient advertising. The delegates to whom the writer spoke were sanguine as to the revival of general business conditions. Several questions relative to agencies and general advertising rates were discussed and resolutions thereon adopted.

It is reported that the utmost activity prevails at the plants of the Spanish River Pulp and Paper Mills, Ltd. They are, in fact, producing to capacity.

The annual convention of the Canadian National Newspapers and Periodicals Association was held on Toronto last week. Mr. John Weld, of London, and Mr. H. T. Hunter, of Toronto, were elected president and vice-president respectively.

Weekly luncheons are being held in Toronto by the local members of the Canadian Paper Trade Association. They are proving of considerable value, not only from the social, but also from the business point of view, as they furnish an opportunity for the discussion of matter of common concern to those attending them.

In connection with the printers' strike in Toronto, an official of Local 91, International Typographical Union, stated, last Friday, that some the work of the printing of voters' lists had been given to what are listed by the Union as "fair" shops, and that this had resulted in some reduction in the strike pay-rolls, and that some men were being placed in positions out of town, with the consequence that the number receiving strike allowances is being steadily reduced. He added that while making no effort to hold up the printing of these voters' lists in "open" shops, the Union was using every influence to have as much of such printing as possible done in "fair" shops.

The negotiations set on foot with the idea of effecting a settlement of the claim brought by the Ontario Government against the Shevlin-Clarke concern, of Fort Frances, Ont., details of which have been given in these columns, have broken down, and the action will now go to trial.

Some months ago it was reported in these columns that a very large amount, in respect of arrears of unpaid taxes, was owing to the Dominion Government by the Riordon Company. The matter has now, within the last fortnight or so, assumed the proportions of an election issue. Indeed, a prominent Liberal told the writer this week that he expected it would be an important contributory cause to the defeat of the Government. The issue is stated by opponents of the Government in these terms: Does the little man have to pay his taxes in cash, while the big man gets off with promissory notes? The Toronto Globe has given much prominence to the matter in a series of uncompromisingly direct and highly effective editorials which emphasizes the point that the controlling stock interest in the Toronto Mail and Empire was in the hands of Messrs. Charles and Carl Riordon who were responsible for the policies of the Riordon Company in the years when that Company was allowed by the Government to pay its war taxes with promissory notes which (it is alleged) have not yet been redeemed.

Mr. Howard Taylor, chief engineer, and W. G. Zimmerman of the staff of H. S. Taylor, Ltd., left Tuesday night for Quebec, en route for the North Shore.

Mr. A. L. Dawe, the newly appointed assistant to the general manager of the Canadian Export Paper Co. left Saturday night for a business trip to the United States.

Mr. Norman Wainwright, in charge of the export business of Howard Smith Paper Mills, has returned from a four months trip to Australia and New Zealand. He reports prospects as being noticeably improved.

Mr. J. N. Stephenson, editor of the Pulp and Paper Magazine, addressed the Montreal Paper Club at their regular luncheon on Tuesday. The subject was the Manufacture of Paper, with brief descriptions of the various raw materials and the principal processes.

Mr. L. R. Wilson, secretary of the Abitibi Power and Paper Co., is still in the Western Hospital, Montreal, recovering from an operation on his throat.

CHANGES IN CANADIAN EXPORT PAPER CO.

Mr. George F. Steele, General Manager of the Canadian Export Paper Co., has been in poor health for some time. A few weeks last summer at Watkins, N.Y., did not result in complete recuperation, so the Company has granted him a more extended leave of absence in hopes of a full recovery of his health. During Mr. Steele's absence the management of the Company's affairs will be guided by a committee consisting of Messrs. Crooker, Bryan and Thorn, sales managers of Laurentide Co., Brompton Pulp and Paper Co. and Price Bros. & Co., with the assistance of Mr. A. L. Dawe, who has just become associated with the company.

ARTHUR L. DAWE.

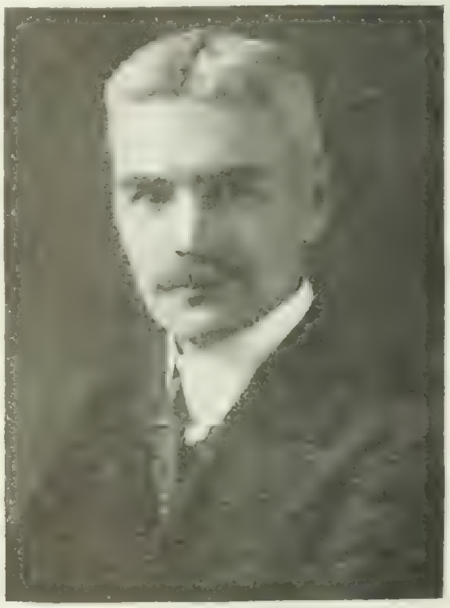
FIBRE CASES FOR SHIPPING RUBBER.

Of considerable interest to rubber shippers in British Malaya and of great importance to rubber manufacturers is the recent introduction of a new type of shipping case into Singapore shipping circles by a representative of an American company. The United States Consul at Singapore writes that these cases, made of 100 per cent fibre, come from the manufacturer in the shape of sheets, the riveting, packing, and wiring being done by local shippers. The cases hold from 225 to 250 pounds of sheet rubber, as compared with 200 pounds contained in the wooden chests, at no sacrifice of surface space, by reason of the thinness of the incasing walls. Their practically nonbreakable quality and absolute cleanliness have been proven, while it is claimed that they are waterproof.

BECK SUCCEEDS DAWE.

At the last meeting of the Executive of the Canadian Pulp and Paper Association, Mr. A. L. Dawe, who has been secretary of the organization for upwards of four years, tendered his resignation in order to accept an important position with the Canadian Export Paper Co. Mr. Edward Beck, who has been in charge of the publicity work of the Association for several years, and has been in close touch with other phases of the Association's work, was appointed Secretary and Manager.

Mr. Dawe has made an enviable record, and Mr. Beck is looked upon as a very happy choice as his successor.



EDWARD BECK,
New Secretary of the C. P. & P. A.

GIVE THE CHILDREN A CHANCE.

Everyone knows that on the children of today depends the future of the nation, but too few act rationally on that knowledge. Children are in the pliant stage when they can be influenced for good or evil, and the result will last their whole life. That is why two or three of the fundamental truths should be impressed on them now. What they learn now will remain theirs forever. Teach the boys and girls thrift and their future is assured. Let them grow up careless of their money and their time, and you are laying a solid foundation for a life of misery. Many of the boys who are going to school now will in a few years work in some industrial plant. If they are impressed now with the idea of safety they will grow up into safe men,—men who will not only be free from accident themselves, but will do a tremendous lot to keep those working with them free from accident as well.

The best way to inculcate thrift and safety in the children is for Daddy and Mamma to set the example. Children are great imitators. Whatever Daddy does or Mamma does, they will copy. If Daddy and Mamma save their money and help the children to save their little bit too, they are giving their boys and girls one of the biggest assets of life. If they are careful themselves in any work they do, the little ones will copy them and grow up careful and safe. It is up to the Daddies and Mammas to give the children a chance.—Broke Hustler.

Technical Section

REVIEW OF RECENT LITERATURE.

L-5. Glucose. AME PICTET, **Helv. Chim. Acta,** iii, 649 (1920); **Paper,** xxviii, 14 (June 8, 1921). Brief discussion of the constitution of alpha- and beta-glucoses and of their anhydrides, glucosan and levogucosan, respectively. A.P. C.

M-4. Friction between Leather Belts and Cast Iron Pulleys. Zellstoff und Papier, i, 5, 149, Aug. 1, 1921. The friction between leather belts and cast iron pulleys is one of the most important facts underlying belt drives and Doctor Rudeloff has investigated this matter using a specially built apparatus, details of which may be obtained in "Mitteilungen aus dem Materialprufungsamt zu Berlin Dahlem." Pieces of leather were pressed against a cast iron rotating disk and the leather selected was tanned in the normal way and in the fat free condition. The following conclusions were drawn: 1. The direction of the sliding motion with respect to the leather is without influence on the frictional force, R. 2. The area of the surface, P, influences the frictional resistance in such a way that R increases as F and in a greater degree than F. 3. With the same velocity, R increases proportionally with the load, P. In several series of tests, R was directly proportional to the load and accordingly the coefficient of friction, $Mu = \frac{R}{P}$ In other tests $R = Mu\,P^{a}$ where a appeared to be independent of the velocity. 4. With increasing velocity, the frictional resistance increased, and corespondingly the friction number, Mu. The direction on this increase is different for the different samples of leather and the cause appears to be in the difference in the surface condition of the leather. With low velocity, the fat free and with high velocity, the normal leather showed greater frictional resistance. 5. Under the same load, R with low sliding velocity was greater for the fat extracted leather, but in the case of the normal leather R was greater under greater velocity. H. E. W.

N-4. Modern Boiler Plant. W. S. JOHNSTON, **Combustion; Paper,** xxviii, 16 (June 22, 1921). Brief sketch of the development in boiler room and engine room design as regards the ratio between floor area and evaporation and floor and power developed.—A.P.-C.

N-5. Coal Handling and Paper Mills. H. B. MOSLEY, **Paper Industry,** ii, 3 (June, 1921). The description of a coal handling system recently completed and put into successful operation at the Lock Haven Mills of the New York and Pennsylvania Company, Lock Haven, Pa.—A. C.

N-6. Electric Steam Boilers. G. A. MAILLET, **Papeterie,** xliii (June 10, 1921). The first commercial electric steam boilers were perfected by the Italian Revel, and there are at present several hundred in operation in Italy. Several large Swiss firms (Brown Boveri, Escher Wyss, etc.) are turning their attention to the construction of these boilers, and they are coming into fairly wide use in Switzerland. These are relatively small. They can use current at 6,000 volts, but the manufacturers guarantee good results only at 3,000 volts or less, and higher voltages require special complicated equipment. About 300 horsepower can be obtained per electrode. What are probably the largest electric steam boilers in the world are in operation at the Frédet paper mills, at Brignoud (Isère), France. They were constructed by the Etablissement Régis Joya, Grenoble, and are of 5,000 hp. each, and take 3-phase, 50 cycle, A.C. at 6,500 volts, and about 800 hp. are obtained from each electrode. The first was put into operation at the beginning of May, 1920, and the second shortly after, and they are used to supply steam to the driers of four paper machines. They have been used both alone and in conjunction with coal-fired boilers, according to the amount of power available from the central station and the production of paper. They can be brought up to pressure (6 kilos = about 80lb.) in less than half an hour, as has been shown by actual trials; but it is preferable to do so in three hours. When they are under pressure, the power absorbed can be varied within every limits almost instantaneously. As the boiler is very large (10 meters long by 1.5 meters in diameter) it serves as a steam accumulator of large capacity and makes operations much more regular. A paper machine or a digester can be started or stopped suddenly without abnormally affecting the steam pressure, or the current may be turned off for over half an hour without interfering with operations. To prevent uneven expansion of the boiler shell, which strains the rivets and might cause leaks, the bottom of the boiler may be heated by some suitable automatic device, or the water may be fed in hot. The electrode insulators are of fused quartz of a special patented design, the factor of safety of which is very high.—A. P. C.

R-11. Forest Products Laboratory's Program. Chem. Met. Eng., xxv (July 6, 1921). Outline of the researches to be followed up at the Forest Products Laboratory during 1921-1922 on the reduction of waste in the wood manufacturing and pulp and paper industries, timber testing, wood distillation, seasoning of lumber, and wood preservatives.—A. P.-C.

R-12. Reasons for High Newsprint Prices in 1920. W. S. PAPE, **Paper,** xxviii, 16 (June 22, 1921). Analysis of conditions which caused newsprint prices to soar in 1920, showing that it was due to inconsiderate buying and bidding against one another on the part or the publishers.—A.P.-C.

FORESTRY AND PAPER MAKING.

I (this sheet of paper) was made out of a green tree. If that tree had been burned, I would be just a cinder. If I am more useful than a cinder, please help to keep my beautiful green brothers from being turned into ashes.

KEEP FORESTS ALIVE

Living forests provide us with wood material of all kinds for our homes and industries, but burned forests provide no lumber for the sawmill, no work for the working man, no business for the merchant, and no freight for the railway or steamship. The moral is that everyone should be careful with fire in the woods.

UNITED STATES NOTES

Beaumont, Texas, is being considered as a possible site for a paper mill by interests in the East, according to T. E. Brazleton, industrial agent of the Santa Fe Railroad, who has been surveying the possibilities in Beaumont for the paper people concerned. Mr. Brazleton says that these interests want to establish a plant for the manufacture of wrapping paper, wall paper and similar lines. As the result of his investigation, Mr. Brazleton has been able to supply data on the amount of timber and timber waste available in territory adjacent to Beaumont. He states that he has found there is much material of the sort available and that there are ample distribution facilities.

Elections held recently by the International Brotherhood of Paper Workers resulted in the retention in office for a further two-year term of Jeremiah T. Carey, of Albany, who has headed the brotherhood for the last sixteen years. Other officers elected were: M. H. Parker, Richmond, Va., first vice-president; Frank Barry, Albany, N.Y., second vice-president; Frank McLeod, Espanola, Ont., third vice-president; George J. Schneider, Appleton, Wis., fourth vice-president; Matthew Burns, Kaukauna, Wis., secretary and Dominic McDermott, Bellows Falls, Vt., treasurer. Two hundred and sixteen locals participated in the voting.

Harrison E. Howe, a prominent figure in the field of industrial chemistry, has been elected to succeed Dr. Charles H. Herty as editor of the **Journal of Industrial and Engineering Chemistry** and director of the American Chemical Society News Service. Dr. Herty resigned the editorship to accept the presidency of the newly formed synthetic Organic Chemical Manufacturers' Association of the United States. Mr. Howe is a well-known industrial chemist. In the world war he was consulting chemist of the nitrate division of the United States Army ordnance bureau. Until his election to his present position Mr. Howe was at the head of the division of research extension of the National Research Council.

John C. Luke, president of the West Virginia Paper and Pulp Co., died recently in New York City, Mr. Luke was 64 years old at the time of his death. After serving as superintendent of various paper mills, Mr. Luke organized his own company and built a mill at Piedmont, W. Va., to make sulphite pulp. This business grew from a twelve ton daily capacity in 1889 to a daily output of 650 tons of book paper at the present time.

The Portland, Astoria and Pacific Railroad, which runs thirty-three miles from Portland west, into the largest body of standing timber in Oregon, is on the market, according to a report from Minneapolis which states that conferences arranging for its purchase by Great Northern and Northern Pacific interests are now going on.

The Grass Fibre Pulp and Paper Company has plans under way for the erection of a steam-operated power plant at Leesburg, Fla., to be used in connection with its new pulp and paper mill there. E. R. Lacy, vice-president and general manager, has announced that bids for the work have been received and that the contracts will shortly be awarded.

Employees of the Stone and Forsyth Company, Boston, Mass., recently tendered a banquet to Edward H. Stone, directing head of the company. The dinner was given in the Hotel Lenox to mark the fortieth anniversary of the firm's founding, besides being intended as a token of esteem to Mr. Stone, one of its founders. Mr. Stone has served as treasurer since the company's organization. The employees presented him with a handsome silver vase, suitably inscribed.

A new concern, the Read Paper Company, has been organized in Philadelphia by Vernon R. Schroff, until recently head of the cover paper department of the Whiting-Patterson Company. Offices have been opened in the Drexel Building from which a circular letter has gone out announcing the company's business plans. It is stated that it will specialize in book, printing papers and specialities. Mr. Schroff has been in the paper business in various capacities with leading manufacturers and jobbers since 1898.

A bulletin sent out by the Philippine Bureau of Commerce tells of the organization recently of a company which plans to erect a paper plant near Manila. This is the first real step ever taken for the exploitation of the potential paper industry of the Philippine Islands.

Mr. W. G. MacNaughton, who was seriously injured in an automobile accident recently, is now out of the hospital and making good progress toward recovery.

PUT IT AWAY, JASON, WE KNOW YOU

—From the Paper Mill.

The Markets

CANADIAN TRADE CONDITIONS

Toronto, 12th November. There has been little change in the paper situation during the past week. But the occurrence of Thanksgiving Day on Monday last must surely have reminded those connected with the industry of much that they have to be thankful for during "the year that's awa'." For that year has been one to test the fibre of every industry in the country. And few industries, indeed, have come through the severe ordeal in such sound and satisfactory shape as that in which speaking by and large, the paper inductry, as one of the very foremost of the industrial units of Canada, in all its branches and ramifications, has emerged from it. On the whole, in spite of a period of depression almost unexampled alike in its scope and in the suddenness of its advent; in spite of unsettlement in almost every direction, of a kind little short of bewildering: in spite of a maze of complications in the path of readjustment and deflation; the industry has stood the strain. Here and there, there has been a collapse, at any rate rate for the moment. But the very infrequency of any such regrettable incident, while it may have tended to exaggerate its importance, at the moment, in relation to the whole industry, must, on maturer reflection, afford evidence of the soundness and stability of the industry as one of the basic factors in Canada's manufacturing and mercantile eminence. The paper trade of the whole country, and those interested in it, have much for which to be thankful. It seems certain, humanly speaking, that the tide has turned, and that, henceforward, the course will be a prosperous one. It is unlikely—and, on the whole, undesirable—that we shall again witness anything like the boom of some years during, and following, the war. The hectic days of "found money" are gone—and they are not likely to recur. Hard work, sound methods, efficiency in operation and quality in products—it is to these that the pulp and paper industry of Canada must look to retain its high standing in the markets of the world. Unless one much mistakes the men behind the organisations which, in the aggregate, compose this great manufacturing unit, these essential attributes to success, in the days of keen and strenuous and wit-sharpening competition that lie ahead, will be forthcoming in abundant measure.

PULP.—There are indications of a better demand for mechanical pulp and the production in some mills is being increased. As regards chemical pulp, the demand for kraft is improving, as is that for strong bleached. Easy bleaching and strong sulphite, too, are somewhat looking up, but producers complain that they are difficult to market at a figure showing a proper profit. In this connection, the importations from certain European countries to the United States still constitute a formidable handicap. Prices show but little alteration, and such extra demand as is forthcoming has not, so far, shown a tendency to render them firmer. Easy bleaching is about $57 to $60 at the mill and strong sulphite around the latter figure. It should be added that producers seem to have some considerable confidence that the competition just mentioned, from European countries, such as Germany and Sweden, for instance, will not continue, in an acute form, much longer. This confidence is apparently based on the belief that the consumption of pulp in Russia and elsewhere in Europe is about to be increased, thus providing an outlet for the surplus which has been coming to this continent.

NEWSPRINT.—Mills manufacturing newsprint are reported to be increasingly busy. The fillip given by the election campaign is making itself felt. So far as demand is concerned what change there has been has undoubtedly been for the better. Prices have not fluctuated much for several weeks. It is anticipated that, before many weeks are over, there will be a substantial increase in production.

BOOK PAPERS.—Business, all along the line, is improving in book papers. Price reductions, so the writer is informed, may now definitely be looked on as out of the question. With consumers no longer looking for anything in this direction, and with increasing signs of a revival in general business, as indicated by a greater activity, though partly, perhaps, seasonal, among retailers, the book paper market may be said to be in an encouraging position.

BONDS AND LEDGERS.—The business in bonds and ledgers is distinctly on the up-grade. Jobbers are sanguine as to prospects from now on. As with book papers, so with these lines; the indications of a general revival in business are held to presage a period of enhanced activity. Sales are showing an increasing improvement. The same thing applies to writing papers.

BOARD.—The board market is evincing a good tone. The paper box plants report as being very satisfactorily busy, with every prospect of going from good to better very soon. In some lines, such as chip board and straw board, there has been a rise in price of $5 a ton, and the lines which have not advanced are firmer in price.

WRAPPING PAPERS.—Kraft is in good demand. The mills are busy and prospects for export trade are said to be on the mend. The demand for manila, however, is not as brisk as could be desired.

TOILETS AND TISSUES.—The situation in both toilets and tissues continues satisfactory. "A nice volume of business in hand and prospects ahead bright," is the way in which one manufacturer summarized the situation to the writer today.

RAGS AND WASTE PAPER.—The market for both rags and waste paper is improving in strength. Roofing rags and new cotton cuttings are in the front rank of activity in this department. Stocks of most kinds, both of rags and waste paper, seem to be not overplentiful.

NEW YORK MARKETS.

New York, November 12 (Special Correspondence).

Holidays have served to slow up business somewhat in New York this week, most local paper jobbing and mill selling firms being closed on both Tuesday and Friday, but reports generally, tell of continued activity in the paper industry as a whole, with the tone of prices quite firm. Advices from mill centres are of very encouraging character. Paper and board mills in numerous cases are operating at full capacity, and it can be said that mills in general are to-day running on a larger scale of production than probably at anytime thus far this year. Moreover, demand is of sufficient volume to absorb practically all of the current output, while some manufacturers are succeeding in moving a good part of their surplus stocks of paper.

Developments in the form of important market changes have been lacking during the week. Prices on all grades of paper hold steady at about previous levels, though it can be stated that the tendency of paper values is still strongly upward in a majority of instances. The newsprint market is firm, with mills steadily increasing their production and shipping out larger amounts of paper. Consumption of print paper was quite heavy during the pre-election period, and now that Election Day is past, everything is in favor of an uninterrupted increase in consumption during the next few weeks when department store and other advertising in the daily newspapers for the pre-Christmas season usually is heavy.

Quotations on newsprint are holding firm. Spot shipments of roll news are freely bringing around 4.25 cents per pound at mills, with reports received of an occasional sale at higher levels, it being stated that newsprint has sold in some cases up to 4.50 cents. The contract price basis is steady at 4 cents a pound f.o.b. mills, and while there is considerable talk in the trade regarding a probable decline in quotations, it seems hardly likely that any change will be promulgated until after the turn of the year.

Fine papers are in a firm market position, and business in this class of paper is constantly broadening. Mills in the Holyoke district are operating on a larger scale at present than in many months and are reported finding a ready outlet for the bulk of their production. Prices show a hardening tendency, and there are many who expect to see further advances in bond and ledger papers, especially since raw material is steadily increasing in cost. There seems little doubt that the sharp rise in bleached sulphite prices, effective December 1, will serve to strengthen quotations on various lines of sulphite bonds, and the rising cost of rag stock is having influence on rag bonds.

Wrapping paper is enjoying a good demand. Consumers are buying in more or less consistent fashion and are absorbing aggregately sufficient tonnage to keep mills well engaged. Prices on No. 1 domestic kraft wrapping are firm at around 7 cents per pound, with the leading producers freely obtaining this figure though with manufacturers of some of the secondary grades of kraft booking orders at a quarter to a half cent per pound under this basis. Tissues are firm in price and in good demand. Mills are rushed with orders calling for quick deliveries, which shows that buyers want tissue paper for the pre-holiday season. Coarse tissues are moving in large amounts and at steady quotations, there being a particularly good call for towels and napkins.

Book papers have quieted down somewhat. It is difficult to explain why, unless publishers have covered their requirements through recent purchases and are now holding back in augmenting their supplies. This much can be said: That consumption of book papers is steadily mounting and the outlook for continued expansion in this branch of the paper market is very favorable. It would seem therefore that the quieter condition of the market is nothing more than temporary, and that as soon as publishers consume a bit more of their present stocks of paper they will again enter the market as buyers on a larger scale.

Boards also have quieted down to an extent; that is, as regards fresh demand from consuming quarters. The mill situation has thus far been little affected, however, as most board manufacturers have enough orders on file to keep them busy for several weeks to come. An official of one of the largest board mills in the East stated several days ago that his concern has ample business in hand to absorb the entire output of the mill for the balance of November and a part of December. Board prices are at a wavering point. There has been no recession lately, but indications are not wanting that unless demand increases soon, quotations may be altered in a downward direction. This applies especially to plain box boards. Plain chip is quoted at about $38 per ton f.o.b. New York, and news board at $40 to $42.50 f.o.b. this city. There is a steady call for folding box boards and for board for corrugating, inferring that manufacturers of folding and corrugated boxes are busier than those producing set-up paper boxes.

GROUND WOOD—Ground wood is firm and, if anything, prices are slightly higher. Sales of foreign ground wood have been reported at $32 a ton, ex the dock at this port, recording a slight rise, and it understood that a majority of domestic grinders are obtaining better than $30 per ton at mills for mechanical pulp. Some grinders are asking up to $35 a ton f.o.b. producing plants, and sales at this basis are said to have been accomplished in cases where the consumer has been located close to the producing mill. Reports continue to tell of grinders having difficulty in operating because of low water, and it is doubtful that production is anywhere near normal, which in itself is a strong market factor.

CHEMICAL PULP.—Chemical wood pulp is in a firm market position and the trend of quotations is distinctly upward. The sharp advance announced in bleached sulphite prices, to go into effect on December 1, serves to have a strengthening influence on prices on all grades of sulphite, and sellers have marked up prices on easy bleaching sulphite, it being anticipated that with bleached sulphite higher paper makers will seek to purchase larger amounts of easy bleaching. Between 3 and 3.25 cents per pound f.o.b. pulp mill or ex dock is the prevailing quotational range on easy bleaching sulphites, and a majority of sellers ask the higher figure. Kraft pulp is steady and moving freely. Domestic producers are obtaining 3 cents a pound for No. 1 kraft, and down to 2.75 cents on secondary qualities, while importers quote between 2.65 and 3 cents on Scandinavian kraft, depending on the quality of the lot involved and the tonnage wanted. There is also a steady movement of news grade sulphite at from 2.50 cents upward at pulp mills.

RAGS.—The papermaking rag market has been devoid of important activity this week. Mills have let up in their buying, and most of the shipments made by dealers have been on back orders. However, prices have held steady with the exception of those on roofing stock. Roofing rags usually the first to feel any reaction in papermaking rags, have receded just a trifle as a result of the narrower demand from consuming quarters, and where felt mills a week or ten days ago were obliged to pay around 1.15 cents a pound f.o.b. New York for mixed satinets, to-day they can buy at $1 per hundred pounds, with the probalities favoring

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INQUIRIES SOLICITED:

some dealers accepting orders at a shade below this level. Old whites are steady, and new cuttings of all grades are firmly held by dealers, who are exerting little or no pressure on buyers. New white shirt cuttings of No. 1 quality are quoted at about 11 cents a pound New York, No. 1 washables at 4 cents, new unbleached muslins at 9.50 cents, white lawns at 9.25 cents, blue overall cuttings at 6.30 cents and new light silesias at 6.75 cents..

PAPER STOCK. Low grades of waste paper are holding steady in price in the New York market, but high qualities evince an easing tendency. There has been a sharp decline in quotations of flat stock, due, it is said, to the retirement of most Middle West book paper mills as buyers. Old No. 1 heavy books and magazines are available to mills at around 1.30 cents a pound f.o.b. this city, representing a drop of some $4 or $5 per ton within the last few days. Shavings also are on the down trend, with offerings by dealers of No. 1 soft whites reported at 3.35 cents New York, and of No. 1 hard white shavings at 3.75 cents per pound. Old folded newspapers rule unchanged at an average of 67½ cents a hundred pounds at shipping points, and there is a steady movement of No. 1 mixed papers at a price range of between 55 and 60 cents per hundred f.o.b. dealers' points. Old kraft is off a trifle in price, dealers now asking 2.15 to 2.25 cents a pound.

OLD ROPE AND BAGGING.—There is a consistently good demand from paper mills for old manila rope and prices on this commodity hold firm at between 4.75 and 5 cents per pound at dealers' shipping points, with sales actually recorded at just a trifle below 5 cents. Mixed strings are in better demand and are selling at 85 to 90 cents a hundred pounds f.o.b. New York. Old bagging shows little fresh improvement in point of demand and prices are generally unchanged at 90 cents to $1 per hundred pounds for No. 1 scrap bagging and between 1.10 and 1.15 cents a pound on No. 1 gunny bagging.

FOREST FIRES BURN THE FUTURE.

Every good citizen should know what forests mean to Canada, to his province, and to his very home; and that every fire that burns in the forests is a detriment to the progress of civilization. Every boy and girl should have instilled into their minds the untold damage that may result from carelessness with fire in the woods. In destroying the forests we are not only damaging the present, but are literally burning up the future.

FUTURE OF FORESTS OF NEW YORK TO BE IN PAPER INDUSTRY.

Utica, N.Y., Nov., 11.—"The future industrial story of the New York State forests will be told more through the manufacture of paper than in the maintenance of the lumber industry, and for this reason the American Paper and Pulp Association, through its Woodlands Section, is anxious to co-operate with the Empire State Forests Products Association in its work for the maintenance of the timber industry.

"This was the statement made by Secretary O. M. Porter, of the Woodlands Section, himself a technical forester, in attending the annual convention to-day of the Empire State Forest Products Association.

"The paper industry," he said, "has, through its Woodlands Section begun some important work in the compiling of statistics relative to the forestry problem, and the Woodlands Section of the American Paper and Pulp Association is composed of the woods department officials of the paper companies which have probably gone farther in the reforestation of cut over lands than any other industry.

"One of the most important recent tasks of this Section has been the compilation of statistics showing the cost of artificial deforestation as practised by paper companies. The first definite statistics showing the advantage of motor equipment in the woods, over horse hauling of timber, were given at a meeting of the Section in April, when various wood operators gave comparative ton mileage by motor vehicle and tractor.

"A specific example of the work now being done is the collection of quarterly statistics showing the amount of pulpwood being cut in all portions of the country, and the amount being used, and these figures are sent to all members of the Section who co-operate in this work."

The mill of the Fort William Pulp and Paper Co., designed and installed by the staff of H. S. Taylor, Ltd., is now producing high grade ground wood pulp at a rate of 25 per cent in excess of rated capacity.

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., November 24, 1921.** No. 47

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EDITORIAL

THE UNITED STATES TARIFF.

On another page of this issue will be found an article by the Honorable J. W. Fordney, the author of the tariff bill which is now before the United States Senate. In this article Mr. Fordney sets forth the argument for a protective tariff and it is interesting to note that he compares manufacturing conditions in the United States with conditions in countries with seriously depreciated currency and ridiculously low labor costs but that he proposes to apply the same rate of import duty as for other countries to goods from Canada where labor and manufacturing costs are as great and in some cases greater than in his own country. His argument is that a scale of wages and the standard of living in the United States must be maintained at decidedly higher levels than in European and Asiatic countries. It would seem that if the standard of living, to which North America has become accustomed, is to be maintained, it could best be done by intelligent, friendly co-operation between Canada and the United States rather than by establishing a basis, or at least an excuse, for retaliation in tariff measures.

One of Mr. Fordney's arguments for high protective tariff, and at the same time a reason why Canada has no cause for complaining against the measures proposed in the Fordney bill is his statement that Canada collected $19.50 last year in import duties for every member of population (based on 1911 census, evidently), that Great Britain collected $16.50 per capita while the United States collected only $3.15. The author of the United States tariff bill however, does not further analyze this feature of International trade. He does not bring out the fact that the United States produces such enormous quantities and varieties of goods that comparatively little need be imported and that such duties as are collected on imports are spread over the enormous population of about 110,000,000. On the other hand Canada is obliged or, at least, inclined, to import even a greater amount than is exported, and that per unit of population the value of imports is inordinately large; they spread over a population of less than 8,000,000 and we necessarily have a figure which, per capita, looks large, but which, when properly compared with United States figures, is relatively only about one half of the amounts derived by them while it puts an additional burden on each person in Canada amounting to about 6 times the burden of import duties borne by our friends across the line. It is a mistake to assume that tariff revenue is entirely a benefit. It is not so much income as a national expense.

The statement is made in the article that the American people are demanding tariff revision. That is probably true, and it is probably also true that the majority of the people if consulted individually would recommend that the revision be in the direction of lowering rather than raising rates of duty. We venture to suggest that the same applies to Canada. Mr. Fordney repeats a rumor that Canada may retaliate. It may be called retaliation or it may be called reciprocity. The two countries are bound to conduct their fiscal policy each with regard to what is done by the other. As soon as one country takes a step which puts the other at an industrial or commercial disadvantage, as surely as the sun sets on that day, the other will plan some means of at least compensating for any disadvantage which it may suffer. The trouble is that, in attempting to neutralize these disadvantages, the tendency is to put a bit too much weight on the other side of the balance.

It has just been announced that President Harding will not appoint the commission which was to have approached the Canadian Government in regard to the export restrictions on pulp wood cut on Crown lands. The reasons for this decision are not stated but the result in any case will probably be that at least one clause of the Fordney tariff will not become operative.

Readers of the magazine will of course, have their own ideas on tariff matters and they will find much of interest in Mr. Fordney's contribution.

WASHINGTON ON THE WASHINGTON CONFERENCE.

Perhaps the most important feature of the Armament Conference, now in session at Washington, is the lack of animosity among the delegates and the apparent determination, in a friendly way, to arrive at definite action that will at once be a relief from the burden of unnecessary armament and a source of confidence for immediate progress in paths of peace. The feeling seems to be growing, that if every nation limits its armaments to what are required for defence, there would be none with strength for attacking another.

Great Britain, with characteristic candor and faith in the good that is in men, has suspended work on a large battleship construction program. It has been pointed out that money would be saved by the support by the government of persons thus deprived of work. That is true, for it would make coal and steel available for factories now, and would hold in peaceful pursuits the young men who would be the future crews, and they would be paid wages by people who get something in return rather than through taxes that go to pay for the maintenance of what should be a useless show of force.

In view of the aims of the Conference a quotation from a letter written by George Washington to the Marquis de Castellux, who had been a major-general under Washington in the army of Rochambeau during the American Revolution ,on the event of the Marquis' marriage, in 1788, will be in order.

The great American said: "Certainly it is more consonant to all the principles of reason and religion, natural and revealed, to replenish the earth with inhabitants than to depopulate it by killing those already in existence. Besides, it is time for the age of Knight-errantry and mad heroism to be at an end...For the sake of humanity it is devoutly to be wished, that the manly employment of agriculture, and the humanizing benefits of commerce, would supersede the waste of war and the rage of conquest; that the swords might be turned into plowshares, the spears into pruning hooks, and, as the Scriptures express it, the 'nations learn war no more'."

NOW IS THE TIME TO BOOST.

As intimated in a news paragraph last week, there is a tendency on the part of some speakers belonging to one of Canada's political parties, to make a feature and an argument of the fact that the Riordon Company owes the Dominion of Canada a large sum on account of taxes. It has recently developed that other Canadian firms are also in arrears and some of them to even greater amounts than the Riordon Company. The attitude of the Government in appearing willing to give the company a chance to recover from the unfortunate predicament into which it has fallen because of the general business depression, and for other reasons, is good business.

The policy of the Government in this respect was followed by the majority of other creditors of the company at a meeting held in Montreal last week when it was voted to give the company an extension of time on accounts until November 19th, 1922. After all, business cannot succeed except on the basis of mutual helpfulness and confidence. The vote of the meeting last week is an expression of the confidence of business men in the soundness of the Riordon Company's physical assets and in the integrity and ability of the men at the head of the company, particularly, we believe, in Charles Riordon and Carl Riordon who have well earned an enviable reputation for absolute honesty and unquestionable sincerity. It is not only a compliment to the Riordon name that is implied in the actoin of the company's creditors; it is their just due. If the affairs of the company are to be straightened out to the satisfaction of its creditors, we believe that success must come through the efforts of the man who has been instrumental in the building up of the company. We have no doubt of his ability to pull the thing through.

The affairs of the Riordon Company amount to more than just the incidents relating to this concern. They affect the whole Pulp and Paper Industry of Canada and incidentally of other countries. The Pulp and Paper Industry of Canada as well as other industries have been passing through a critical period and the light does not yet shine full though the skies are brightening. It is in these rather cloudy days that sympathy, confidence, and help are needed by all of us and we fully believe that with each one now lending a hand, the future can be faced with strong faith in the ability of the principal manufacturing industry of the Dominion of reassert itself as a strong and prosperous unit in the industrial life of this continent.

Now is the time to boost.

FORESTRY. REPORTS.

A couple of weeks ago there arrived almost in the same mail, a report of forestry conditions in the United States particularly with relation to the production, importation and consumption of pulpwood in the United States for the year 1920 and the report of the Director of Forestry in the Department of Interior for Canada for the year ending March 31st, 1920. Thus we see that while nine months had elapsed between the ending of the year reported on and the appearance of that report from across the line a period of 17 months had passed before the report of the Director of Forestry for the year which ended March 31st 1920, was available.

It is seen that both of these reports were delayed in the printing more than is necessary. To be of greatest value, statistics should appear promptly and it is to be hoped that future reports can be had soon enough so that quotations from them will apply to events within the memory of the reader.

In the report of the Director of Forestry, there are a number of very interesting items. For instance, in his introduction, Mr. Campbell mentions the amounts expended in other countries on Forest Management and Protection. He shows that revenues received increased from $23,444 in 1914 to $127,975 in the year under review. He predicts that in time our forests will make financial returns commensurate with those secured in Europe. In France, he states, the expenditure on state forests is $3,000,000 or $1 per acre and the revenue is $4,800,000 or $1.60 per acre. In Hesse there is a net revenue over expenses of $5.32 per acre and in Saxony an expense of $3.33 per acre brings in receipts amounting to $6.35 per acre. In Switzerland the net annual returns range from $3 per acre in the forests where less is expended to $4 per acre where most is expended.

After reviewing statistics relating to the forests and giving a general account of tree planting, recreation, grazing, improvements, protection and the like, in general and for the various divisions of the forestry work, we come to the report on the Forest Products Laboratories. This report shows that a great deal of valuable work has been in progress and much has been accomplished which is of greater service to the people of Canada than the ordinary individual is likely to appreciate.

A review of the report on Pulp and Paper Statistics for the United States will be given in another issue.

The Need of a Protective Tariff

By Hon. J. W. FORDNEY.
Chairman of House Ways and Means Committee, United States Congress.

The House of Representatives recently passed two great revenue measures, now before the Senate—the general tariff revision and the general revision of our internal revenue laws. The Senate has decided to take up the internal revenue bill and pass it ahead of the tariff bill. I think that is a most serious mistake. The manufacturers of this country can pay no profits until they are given the opportunity to make money.

We are importing at the rate of about $300,000,000 worth of foreign goods per month into the United States. Most of those goods could be made here. There is not a manufactured article produced in the United States in which labor cost is less than 90 per cent of the total cost—I mean, following the raw material from start to finish. Now, if that is true, of the $300,000,000 that we are sending abroad each month to buy foreign made goods, $250,000,000 is going out from the people of the United States to employ German, French, English, Japanese and Chinese labor, while our laborers are walking the streets in idleness.

Under free trade we must come to a common level somewhere, if we compete with all the countries of the world. To-day German labor is getting from 60 to 65 cents per day in gold for ten or twelve hours. Japanese and Chinese labor to-day is from 12 to 18 cents per day in gold for twelve hours work. If we had to be placed on a par with the imports from those countries, do you believe we could lift those foreign countries up to our standard of living? Not at all. We have got to come down to a common level somewhere, but we are not ready to do that, and we are not going to do it.

The people of the country are demanding tariff revision. Some people say that Canada is going to retaliate. Canada is the best customer we have in the world, on the basis of population. There is no place in the world where our balance of trade is stronger than in Canada. Canada has no reason to complain about the rates fixed in the new tariff bill; none whatever. I will tell you why. Last year Canada collected $19.50 in import duties for every man, woman and child in Canada. Great Britain, the great free trade country of the world, or said to be, collected $16.50 per capita, or $728,000,000. We collected $3.15. Little Japan is collecting at the rate of 20 per cent, ad valorem, upon all her imports, dutiable and free. We have the lowest duty of any principal country on the face of the earth right now, and have had since 1913. One year, under the Payne tariff law, we had the greatest volume of imports of any year in the history of the republic up to that time—$1,812,000,000, and on those imports we collected in round numbers $331,000,000 in revenue import duties. Last year, under the Underwood tariff law, we imported $5,300,000,000 worth of foreign goods and collected exactly the same amount of duty $331,000,000, that was collected under the Payne tariff law on $1,812,000,000 of imports, one-third the ad valorem rates of duty under the Underwood law that were collected under the Payne law. Had we collected the same percentage of duty on imports last year that were provided for in the Payne tariff law, we would have collected a billion dollars of revenue.

We hope that this new tariff bill will curtail imports. We believe it will, but there are no rates in that law that are prohibitive, none at all. We never had and never will have a tariff law that will be an embargo in imports. It would not be wise to do it. Wise men will not adopt such a law. But what we do want is to get just as near as possible in imposing an import duty on foreign goods, one that will bring the cost to the foreigner up to the level of our oost of production in this country.

No American is afraid of any foreigner, unless under our laws that foreigner has an advantage over him. The American is ingenuous enough to hold the business of this country, unless you give his competitor an advantage over him. That is what we are afraid of, having the rates too low.

Way back in 1879 we had a provision in the tariff law to collect ad valorem duties on the American valuation. There was a future time fixed for that law to take effect, but before it took effect the great influence of the importer brought to bear induced Congress to repeal that provision of the law.

Some people are opposing American valuation, some of the great importers of the country. Some of them have sent out circulars appealing to the merchants of the country, the manufacturers, to appeal to their congressmen and their senators to oppose American valuation. Why? I will tell you why. Last year in the customs office of New York alone there were fifty-four hundred cases of under valuation, and this year they are running at the rate of five hundred cases a month.

Why do foreigners who export to this country or people of this country who import from foreign countries undervalue? Because they pay less duty. Profit is made in the duty if they can import at fifty cents on the dollar of the real value of the goods.

They say we cannot take care of some articles of import because we do not know their values. How ignorant we are. We now accept the foreigner's statement. Why not accept our own? Haven't you got more confidence in yourself than you have in a foreigner?

There is another good reason why we should have American valuation instead of foreign valuation. There is the exchange value of foreign money, a most troublesome question for us, to equitably arrive at the correct values, because foreign moneys have different purchasing values in the countries of their origin than the exchange value over here, and it is most difficult for our customs collectors to determine those questions.

Canadian money to-day has an exchange value in the United States of about 85 cents on the dollar. The English pound, with a par value of $4.86 over there, has an exchange value over here of about $3.72. The French franc with a par value of 19.3 cents has an exchange value here of between six and seven cents. The German mark, 23.8 cents par value, has an ex-

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*Consists of American Valuation Association.

change value in the United States of about one cent, but it will buy seven or eight or ten times that value over in Germany. Rates on Nov. 22 were, respectively, in New York, \$.91¼, \$3.9925, \$.0712, \$.0036.)

American valuation will fix the valuation upon the gold dollar. Every dollar of our money since 1896 is worth one hundred cents, because it is all redeemable in gold, and we will eliminate those exchange values of foreign money by American valuation. Those are the two outstanding reasons for American valuation.

CHANGING BOARD WEIGHT TO REAM WEIGHT.

In answer to a correspondent's question, as to how to change board weight to ream weight, and vice-versa, the Paper Trade Journal replies:—

Answer No. 2552.—June 1, 1920, the Eastern Paperboard Manufacturers' Association published a booklet giving the gauge and ream weight tables to be used. There are several definitions and rules for figuring box board which are given here:

Bundle.—A bundle of boxboard is a standard package of same weighing 50 pounds.

Number.—The "number" of board indicates the number of sheets, size 26 x 38, in a bundle weighing 50 pounds.

Count.—By "count" is meant the number of sheets of any size in a bundle of 50 pounds.

Regular Size.—The regular or Standard Size of all grades of board, except Patent Coated and Solid Manila, adopted for the United States is 26 x 38, containing 988 square inches.

The Regular or Standard Size of Patent Coated and Solid Manila Board is 24 x 36, containing 864 square inches.

Regular Number.—The regular number indicates the number of sheets, 26 x 38 in size, in a bundle of 50 pounds.

To Determine Count of Odd Size Sheets.—If not sure of the regular number of the board desired, determine same by gauge list. Divide the number of square inches in a bundle of the regular number desired, by the square inches in the special size sheet desired, and the result is the "count" or "number" of the special size desired.

To Determine Regular Number of any Special Size.—Knowing the count of the special size, multiply the square inches in special size sheet by the count, the result being the square inches in the bundle. Divide the square inches of the special size by the square inches in a regular sheet (26 x 38—988), and the result is the "regular number.

Below is gauge list and ream weight table for:

Patent coated—chip back.
Patent coated—news back.
Patent coated—news center Manila back.
Patent coated—solid Manila back.
Patent coated—blue back.
Solid Manila board.

Caliper Lbs.	Basis 500 sheets 24 x 36 (864 sq. in.) Lbs.	Basis 500 sheets 25 x 40 (1,000 sq. in.) Lbs.
.011	154	178
.012	168	194
.013	182	210.60
.014	189	217.60
.015	195	225.69
.016	208	240.70
.017	221	255.78
.018	230	266.20
.019	238	274.88
.020	245	283.56
.021	252	291.66
.022	264	305.55
.023	276	319.44
.024	288	333.33
.025	300	347.21
.026	312	361.10
.027	324	374.99
.028	336	388.88
.029	348	402.77
.030	360	416.65

Rules for Figuring Weight of Odd Sizes.—Use the decimal table above, which is on the basis of 1,000 sq. in. and is accurate. First find the square inches in the sheet wanted and multiply same by the decimal in 25 x 40 table above, then point of decimals and you will have the correct weight of the odd size per ream.

Example.—22 x 34, —.018 Patent Coated. 22 x 34 =748 sq. in. x 266.20=199 pounds per ream.

If you had an order which read 26 x 38—25 you would have a bundle of twenty-five sheets weighing fifty pounds. To change this to ream weight you would have to divide 500 (the number of sheets in a ream) by 25 and multiply by 50 which would make the ream weigh 1,000 pounds.

THE TARIFF: WHY CANADA NEEDS IT.

Under this title the Canadian Manufacturers Association have just published a book of ninety-four pages on various aspects of the tariff question. It is discussed from every conceivable angle and contains a great deal of information which has not been collected in one cover previously. Among the interesting features, is a chapter showing the tendency of many other countries to increase protection. Unfortunately there is not space to quote freely from the many interesting chapters in the work so we commend the reading of it to those who are interested in the question.

A pertinent quotation from Abraham Lincoln which applies quite as much to the attitude of the Canadian buyer as to the question of tariff policy is, "I do not know much about the tariff; but I know this much; when we buy goods abroad, we get the goods and the foreigner gets the money; when we buy the goods made at home we get both the goods and the money."

ALL NOW OPERATED AS PROVINCIAL PAPER MILLS.

The charters of the St. Lawrence Pulp and Paper Company and the Port Arthur Pulp and Paper Company have been cancelled by the Ontario government and the industries, which formerly operated under these names, are now under the ownership and control of the Provincial Paper Mills Company, Limited, of Toronto, which has plants at Mille Roches, Thorold, Georgetown, and Port Arthur, Ont., all of which are busy at the present time and operating to capacity. The company reports there has been a decided improvement in the book, writing and ledger paper business during the past few weeks and that buying is heavier.

Idle Time as a Manufacturing Loss*

During this period of depression and subnormal production this subject is timely and a problem most of us have endeavored to solve.

We hear the statement frequently that when production goes down, costs go up. Do costs go up?

If a company operates two plants in different localities the manufacturing costs in mill No. 1 would not increase because mill No. 2 was not operating. Therefore, the same reasoning applies regarding the cost of paper on one of two machines when the other is idle.

Principal Problem of Cost Finding.

The principal problem of cost finding is to assign the expense or burden so that each production unit shall bear its own share. An examination of the expense item will show that while some remain fairly constant others vary with the volume of the business.

Such items as rent, taxes, insurance and depreciation of buildings do not vary materially, whether the plant is active or not. Such expense can never become zero, no matter how slight the production. Depreciation may be greater when the factory is idle than when it is in operation. Other items of expense are affected by changes in the volume of business. Indirect labor and operating supplies are directly affected by such changes, moving up and down as the production varies, though not in direct proportion to such variations.

It is also important to notice that profits do not vary in proportion with the volume of business. Fifty per cent production does not mean half profits as there is always an irreducible minimum of expense items and if this minimum is high compared with the variable charges due to the activities of the business, a slight decrease in business may cause an operating loss.

Break Even Volume.

In every business, there is a break even volume, that is, every company must manufacture a certain number of units in order to carry the fixed overhead and that amount of direct expense, which becomes necessary to the manufacture of that particular quantity produced.

As soon as the company passes this point, however, the increase in percentage of profits is very marked inasmuch as the fixed overhead does not increase and each additional unit produced decreases the unit of expense cost. Neither does the direct expense increase in any such proportion as amount of production. We must bear in mind that there is a great danger, even in increasing production, for the minute that you have to increase your fixed expenses, then there is a real problem to face. Increased production may only lower costs so long as it can be handled with the present plant and equipment.

Expense may vary according to time, as a large amount of coal may be purchased but the consumption of this coal may extend over a period of months. Extensive repairs may be made to buildings or machinery. These expenses will fluctuate with little reference to the amount of business handled, therefore it would not be fair to current production to charge off this heavy expense against it, as this method would favor either future or past production.

In establishing normal rates we must analyze expenses carefully over a sufficiently long period.

Important Burden Volumes.

Among the important items are such fixed charges as taxes (other than Federal income and excess profits), insurance, depreciation and repairs. Taxes and insurance should be distributed on the basis of the net value of the equipment in each department. This only refers to fire insurance and taxes on the plant.

Depreciation is one of the most important of all the overhead expenses. There are several methods of figuring the amount of depreciation. A simple method for determining depreciation is to estimate the scrap value of the equipment and deduct this amount from the original cost. This difference is then divided by the estimated years of usefulness of the machine.

Repairs are also an expense item for the maintenance of the plant. The repair shop should be treated as an individual unit and each job repaired should be charged to the department for which the work has been done.

The power plant is an important factor and its operating costs form a considerable part of the burden. Each department using steam or power should be charged with its share of this cost. Records should be kept showing the efficiency of the boilers.

Variable charges or controllable expenses such as miscellaneous supplies and non-productive labor are also items of factory overhead. These items should be charged to an account called general factory expense.

When all these charges making up the overhead or burden have been analyzed and carefully distributed to the several departments, a total burden charge for each department can be ascertained. This total divided by the normal operating time established correctly will give a fair burden rate per hour.

Errors in Establishing Normal Rates.

Errors are often made in establishing normal rates over a period of a year. This method under normal conditions would be correct, but in times like the present, when the situation six months ago was entirely different from that of today and with no expectations of that same condition being reached again for a long time. I believe it would be a serious mistake to include figures pertaining to the past period in arriving at present day standards as a measure for future operations.

The setting up of normal charges does not mean that we can abandon the analysis of actual burden costs. The analysis of actual expenses and estimated, reveals an interesting comparison.

Normal hours do not mean possible working hours as many hours are lost during the year, on account of holidays, repairs, low water and similar reasons. In estimating normal hours it is necessary to make an allowance for lost time due to the above causes.

It is generally conceded that eighty to eighty-five per cent capacity is a normal production. I would recommend figuring for standards to be used on this basis.

In order to illustrate this point let us assume that a manufacturer after careful study and taking into consideration present conditions and trend of the times, has established normal rates in the several departments through which his product progresses and he arrives at a beater labor and burden rate of $1.60 per hour, maat the rate of $5.50 per hour, etc. The books of the company will be operated on costs as shown by these rates during the period decided upon.

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* Address given by H. A. Wingate, assistant secretary C. H. Dexter & Sons, Inc., before the Cost Association of the Paper Industry at the Drake Hotel, Chicago, October 6, 1921.

Cost of Idle Hours.

As each month passes the costs of actual operation are found and measured against the normal rates and the difference noted. This difference represents the cost of idle hours and is chargeable to profit and loss or an unearned burden account.

For example, let us assume that the actual operating costs per hour over a certain period in relation to the standard or normal cost were as follows: I am presenting a theoretical cost, first arriving at a normal final cost, then showing how the idle hours affect this cost by departments. The normal beater labor and burden cost is $1.60 per hour and the actual cost is $2.40 per hour. The normal machine cost is $5.50 per hour while the actual cost is $8 per hour, etc. The normal final result shows a cost of $0.206 per pound, the actual or increase caused by the idle hours gives us a cost of $.248 or $.042 additional.

Idle Machinery and Reduced Expenses.

There has been in the past and there are still many different opinions as to the correct method of calculating and handling the increased cost occasioned by idle machinery and reduced production. Many companies figure these standards and charge the difference between the cost of manufacturing on that basis and the actual cost direct to profit and loss or an unearned burden account. I strongly believe that there is a great benefit to be obtained by going a step farther than this and show the unearned portion of the expense against the final cost in the manner described. It should always be figured separately, however, so that it will not be lost sight of.

Whether we believe it or not, the fact of having the actual cost before the manufacturer is bound to force him to the realization of the situation and I believe the average man with these figures "boiled down" and placed against the individual runs of paper is in a far better position to meet intelligently the problems confronting him and will make him a better competitor than he would be if he was simply presented with normal cost records, charging Idle Hours to Loss and Gain or some other account.

It is possible some may feel that it will entail too much time and labor to apply the expense caused by Idle Hours to the normal costs.

If records are kept in the proper manner, the additional labor required in doing this would be slight and by far would be more than offset by the benefit derived therefrom.

A manufacturer who has this information before him will have the facts needed in basing his manufacturing and selling policies.

SWEDISH EXPERTS IN MONTREAL.

A meeting of the sulphite section of the Canadian Pulp and Paper Association was held in Montreal during the week in order to confer with three Swedish experts who were in Montreal, namely, Mr. Lundgren, secretary of the Swedish Cellulose Association, and Messrs. Nostrum and Asplund, representing two of the biggest producing companies in Sweden. They came in order to discuss with the Canadian producers international conditions as they affect the industry and they propose to make a visit to representative Canadian mills. They were entertained at a luncheon at the Ritz-Carleton Hotel by the Sulphite Section.

Considerable difficulty will be experienced in Toronto, and possibly in other places, in getting out the voters' lists for the Dominion election in time. Some printers have refused the work, on the ground that they could not take it in addition to their usual work. Besides the printers' strike, and the difficulties which this occasions, it may be mentioned that the lists are twice as long as usual, owing to the addition of the women voters. Thus there will be unexampled difficulty in getting them out by the date fixed, the 2nd December.

COST SHEET

Defects	100
Machine Broke	400#
Trimmings	450
Total	950

Date 9-15-21
Machine No. 2
Beaters 10
Run No.
Quantity
Grade
Lbs. 9,100

			Normal cost		Actual cost	Increase
Raw and prepared material cost			$1,050.00		$1,125.00	$ 75.00
Beater labor and burden	180 hours	$1.60	288.00	$2.40	432.00	144.00
Machine labor and burden	45 hours	5.50	247.50	8.00	360.00	112.50
Finishing labor	600 reams	.12	72.00	.14	84.00	12.00
Finishing burden	120 per cent		86.40	150%	126.00	39.60
Finishing material			70.00		70.00	
			1,813.90		2,197.00	383.10
Credit 950# broken			28.50		28.50	
			1,785.40		2,168.50	
Selling expense			90.00		90.00	
			1,875.40		2,258.50	

Normal manufacturing cost ..	$0.196 lb.
Total normal cost	.206 lb.
Normal gain per machine hour,	$8.88
Sale price,	$0.25 per lb.

Actual manufacturing cost ..	$0.237 lb.
Total actual cost	.248 lb.
Actual gain per hour	$0.40

Development of Industrial and Scientific Photography

By M. A. COULSON, Industrial Photographer,
Spanish River Pulp and Paper Mills.

Editor's Note: Mr. Coulson's contribution to the subject of Industrial Photography is much appreciated. This kind of discussion is of the greatest value to the industry. The reader has time to think it over. We trust that a number of them will do so and contribute their ideas on the subject. The pages of the Pulp and Paper Magazine are open to all who have a message to the industry. The aim of its publishers is essentially to improve and to educate.

In an article appearing in the Pulp and Paper Magazine for October 27th, by John H. Graff, Industrial Photographer and Photomicroscopist, suggestions are made as to the advisability of holding a convention or conference among Industrial and Technical Photographers. I assume that this idea is to have expressions of opinion from those of us who are especially interested in the question of Industrial Photography and hence I am writing to back up Mr. Graff's suggestion. I am very glad indeed that he has "started the ball rolling," and submit a few observations which I have made during the past few years, thinking possibly they may help Mr. Graff and others who are as interested in this question as I am. The conference suggestion, it seems to me, is a splendid idea and an exhibition of technical and industrial photographs as well as lectures would prove very useful to the many concerns that have established permanent photographic departments, or that might have them to their advantage.

Photography as applied to industry has come to stay and has justified the establishing of a department of its own in many commercial organizations to-day. I believe it will soon be necessary for our technical schools to adopt a general knowledge of photography as practical for engineers, surveyors and others. Photography of the future is to play a very important part in scientific research, according to all indications. Photography as used in the operation of a large industrial plant leads to the better efficiency of all departments; at least I have found this true. A photographic survey made during the construction of a plant and its extensions makes a thorough indisputable history of the highest educational value. By the taking of photographs at suitable intervals, by dating and filing them, a complete history of the progress of constructional work in a plant may be obtained in a permanent pictorial form. These photos may be found to be of great value in the event of sudden disaster, which may at any time lead to great changes. This type of photography is distinctly technical and far removed from what is known as "Snapshotting." Indeed, a person may be well skilled in some branches of photography and yet prove unsatisfactory in carrying out photographic work of this nature. The engineer who believes that he has only to buy a camera and follow a book of given instructions in the taking of valuable photos is somewhat comparable to the man who, by the aid of a dictionary endeavors to translate a language, the grammatical background of which he has no knowledge. This branch of photography requires special and really scientific experimentation. It cannot be learned over-night. Photographs showing the detail and general progress of construction give more complete evidence than any short verbal description could do and these photos must be carefully taken.

In the case of accidents, which happen from time to time in large industrial plants, in spite of preventive methods, the photographing of the scene and its details is essential, although of course nothing should stand in the way of rendering immediate aid to anyone suffering from injury. The filing of a complete photographic history of events of all kinds is of inestimable advantage to any industry. It is not that it simply provides information that may be of use to those connected with the management, but it often saves disputes with all their attendant troubles and expense, and if an action at law is unavoidable it is the means of much valuable evidence.

Photographic mapping and surveying is a long and important step in the right direction. Photography offers the advantage of giving the whole view of the subject and at the same time the details at a glance. This renders possible what would be entirely impossible at times by the more usual methods of topographical surveying. The time is past when it is possible to doubt the application of photography to this purpose. With the advent of flying machines we have seen revolutionary changes in aerial work. The writer has had some experience in aerial photography, although of an experimental nature. The "Birds-eye view" has always been a favorite for revealing to the best advantage the entire formation and location of large plants and other large objects. Heretofore such views have usually had to be drawn by an imaginative artist. It has been proved that aerial photography can be used to great advantage in locating pulp-wood throughout our timber areas. With a photographic map as a guide we have a working basis superior to the best draftsman's diagram, for it provides a wealth of detail whereby the Forester and his men may definitely locate timber and streams. It makes possible the rapid photographic survey of large limits which were very difficult to cover by the ordinary surveying methods. Lake and river surveys are made easy by aerial means and will show at a glance the available sources of water supply and the quickest way of utilizing the same.

There is also a field of large scope in scientific pohtography in research work. A great deal of useful and interesting knowledge may be gained by means of photo-micrographs. The photographing of objects which are invisible to the eye because of their minute size has been made possible by photographing through a microscope. Although this idea is not a new one, yet some of the finest photo-micrographic work has been done during the present generation, as is well known. Photo-micrography provides us with a means of spreading knowledge concerning microscopic bodies much better than can be done by direct microscopy itself. By the application of photo-micrography to facts hitherto hidden to the unskilled, untrained eye, we have been able to convince the uninitiated of the importance of certain truths.

The growing importance of [illegible] every point of view, educational, industrial, and scientific, is not realized as it should be. If it were, photography would not be left to so few specialists, and to such a comparatively large number of those who regard its practice merely as a pastime or an amusement. Doubtless, the substance of remarks of the writer are known to many, but it seems to me that only by the free interchange of ideas in this field can we make real and lasting progress.

REPORT OF THE T.A.P.P.I. SODA PULP COMMITTEE.

By G. K. SPENCE, Chairman.

Arrangements were such that time was to have been very much limited in Washington, and the Soda Pulp Committee had not made very elaborate plans for work at this meeting. It was understood that the work laid out by the Bureau of Standards would exhaust about all of the time allotted for papers and discussions in the general assembly.

It was, however, arranged by the Soda Pulp Committee to have a conference some time during the evening at Washington, which was to have been in the nature of a symposium on "Recent Developments in Soda Pulp Washing."

Mr. Morrison of the Oliver Continuous Filter Company, was to present a paper on results obtained by use of continuous filters on washing black liquor from soda pulp, giving figures showing results obtained in mills where this system of washing has already been installed. This paper was to have been followed by a discussion on this very important question, and if time had permitted, other subjects of general interest to the soda pulp manufacturer would have been discussed. Since it has been deemed advisable to cancel the fall meeting, Mr. Morrison has arranged to have his papers published in the trade papers in the near future.

The Soda Pulp Committee is now planning to have a doubly interesting meeting in the spring in order to make up for what we have missed by cancelling the fall meeting. The same idea will be carried out that was inaugurated in New York last April. Each member of the Committee will be requested to write a paper on a subject of interest to the soda pulp manufacturer, and all papers will be discussed at a soda pulp conference to be held some time during the meeting. The program will be so arranged that all members will have advance notice of the time of this conference and such a time will be selected that will not interfere with any member attending any of the other conferences in which he is interested.

My associates on the Soda Pulp Committee for the ensuing year are: Messrs. Martin L. Griffin of the Mount Hope Finishing Company, Grellet N. Collins of the Dill and Collins Company, Wallace H. Howell of the New York and Pennsylvania Company, George M. Trostel of the Champion Fibre Company, and William S. McClelland of the P. H. Glatfelter Company. These men have all had long and varied experience with soda pulp manufacture and their papers should elicit interesting discussions.

The sulphate pulp mill of Clarke Brothers, at Bear River, N.S., has resumed operations after a shut-down of several months.

RIORDON CREDITORS GRANT EXTENSION.

The formal meeting of creditors of the Riordon Company, Limited, which was held Nov. 17th, unanimously ratified the proposal of the company for an extension of credit of one year to November 19, 1922. The original proposal was slightly amended, inasmuch as it now contains the names of the three new members of the creditors' committee, as mentioned hereunder, and also contained a clause to the effect that present rights of the Dominion and Quebec Governments be preserved in the plan as they exist.

The meeting was originally convened in the office of Gordon W. Scott, trustee, at 11 a.m., but was immediately adjourned to the Windsor Hotel. There was a large attendance of creditors, upwards of 200 being present.

Nothing of extreme interest transpired apart from the vote on the proposal. The meeting elected Mr. Scott to act as chairman of the meeting, and following reading of the minutes of the first section of the meeting, he prepared to answer any questions which might be asked him. In a reply he stated that the extension asked for covered all debts of the company for one year. He also stated that obligations, originally made as carrying interest, will continue to do so.

Mr. Scott referred to a printed statement of the company's position, explaining the various clauses. The statement, in balance sheet form, dated August 31, 1921, shows total estimated liabilities as expected to rank at $6,761,782, and total estimated assets at $24,639,088 leaving estimated surplus assets of $17,877,306. He pointed out, however, that while this statement was correct so far as a liquid company was concerned, in the case of bankruptcy there would be nothing left for creditors, inasmuch as estimated surplus from securities in hands of creditors of $24,423,798, would be more than eaten up by value of securities, $47,571,256.

The appointed scrutineers then took up the ballot cards, and while they were unable to present a full count of the ballot, it was stated that all votes cast had been in favor of the proposal of extension, and not one vote had been cast against the plan.

At the meeting the day before of creditors, preliminary to the formal meeting of today, a number of interesting developments took place.

The retirement of F. P. Jones from the executive committee of the Riordon Company, Limited, has resulted in the addition of three new members to the committee, thus enlarging it by two. Montagu Davy, chairman of creditors' committee, N. W. Wilkinson, representing the Union Sulphur Company, New York, and W. S. Sample, representing the Fuller Company, Montreal, are the three new members. These two latter members have also been added to creditors' committee, H. A. Elliott, K.C., has succeeded R. C. McMichael, K.C., as advisory counsel to creditors, the latter's partner acting on behalf of bondholders.

I. W. Killam, president of Royal Securities Corp., supplied the bulk of information to the meeting, as presented hereunder.

Probably the most interesting constructive development which has been attempted on behalf of the Riordon Company, Limited, has been the re-opening of the Kipawa Mill, the largest pulp producer of the organization. The operation of this plant has met with such a degree of success that it has been decided by the committee in charge to re-open the Hawkesbury plant. The sales staff have been particularly fortunate in selling out the Kipawa capacity and they allege that they can do the same things as regards Hawkesbury. Providing they are able to get sufficient initial business, the mill will open. It is also intimated that following this attention will be turned to the other plants of the organization, including the American plants. At the present time the pulp produced is being sold at a price which assures a small profit with inventories brought down to cost. At present rate of operations it is expected that the supplies of materials on hand will be brought down to exhaustion before the spring log drive of 1923. This will mean that the company would then be in a fairly good position physically . The Gatineau mills have been producing lumber all through the summer, although they were closed at times owing to the low water and the fact that logs could not be brought down without trouble.

It is entirely probable that some new financing will soon be attempted on behalf of the company, through the medium of creditors and shareholders. The plan at present under consideration is for the raising of a loan of $1,500,000, or thereabouts, asking unsecured creditors and preferred shareholders to contribute at the rate of 10 per cent of their claims or holdings. This would mean that creditors would contribute about $400,000 and preferred shareholders the balance. This issue would be secured by segregation of the Gatineau assets and placing them up as collateral.

There seems to be no doubt that the Edwards and Gilmour & Hughson interests will do all in their power to help the company, by granting further extensions from time to time, but without written agreement. These interests already have had to put up moneys to protect the properties. Proceeds of any new issue would be used to clear up immediate indebtedness on these properties, as well as to bolster up working capital, and it is stated that with this money, the company could carry on uite well, providing the pulp market continued reasonably good.

It is also stated that the attitude of the American bondholders towards the company is friendly. As acting on behalf of other bondholders these interests must be expected at all times to look after their interests as a matter of business, and they will not allow these interests to be jeopardized in any way.

It is understood that all bond interest has been paid up to last June and July. New financing would help the coming bond interest, which it is the ambition of those in charge of the company, as well as the necessity to maintain. There falls due on December 1st, $240,000 in United States funds; January 1st, $120,000 in United States funds and $55,000 in Canadian funds, making $415,000 in all.

The meetings of the creditors brought out the fact that at the present time there is no manager of the company. Creditors committee pointed out that they were open to suggestion for a good general manager who could take full and practical charge of operations. This [illegible] be a high salaried executive as the position was one of considerable responsibility.

The point is also brought out that any judgments against the company which have been taken have not been paid, and with the granting of the year's extension, all creditors rank on the same basis.

Summed up the creditors meetings have revealed a marked change in the Riordon outlook. The granting of the year's extension by creditors has secured the liquidity of the organization until November 19, 1922, and the company, although having taken protection under a clause of the Bankruptcy Act, is still a legally liquid entity. The future is dim, of course, although there is a fighting chance to pull through. Much depends upon the condition of the pulp market, although paper men voiced the opinion that improvement rather than unsettlement could now be looked for. It might take two, three, four, or five years to even get to a position where the company would be on its financial feet again, but it was up to the creditors to help this along by giving the company a fighting chance. If they were to force liquidation now they could not get a cent. With the company's mills in operation its credit in enhanced, and bank financing easier to accomplish. At the present time, however, any money which comes in from the sale of pulp is going out again in wages, expenses, etc., netting only a small margin of profit. The work of pulling the organization together, it is impressed upon all parties interested will be slow, but at the present time it is hopeful work.

OVER-OPTIMISM.

New York, Nov. 18.—Warning against undue optimism is expressed in the monthly review of business conditions of the American Paper and Pulp Association, when Dr. Hugh P. Baker, Executive Secretary, called attention to the need of caution in accepting statements that business has permanently turned for the better.

"The outstanding note of the recent business conference of the paper industry at Chicago," says this review, "was an essential but conservative optimism as to the future of the industry. One prominent manufacturer phrased it slightly differently, when he said that this meeting of the paper manufacturers and merchants demonstrated the need of "constructive pessimism" for the next few months.

"The outstanding feature of the conference was the essential optimism as to future business conditions evidenced in the formal address and informal conferences alike. The addresses gave not only optimistic sentiment, but statistical evidence to warrant such a feeling that undue optimism was not to be encouraged, that feeling of constructive pessimism referred to above.

"Every external evidence was that the worst phase of the deflation period was passed, but that minor re-adjustment may be possible before industry in general is fully stabilized."

U.S. PRODUCTION AND SHIPMENTS OF PAPER.

Washington, D. C. — The Department of Commerce it its Survey of Current Business has the following to say regarding the paper industry:

"News print production declined 3.4 per cent and shipments dropped 5.7 per cent in September. Stocks of news print gained 11.5 per cent. Paper other than news print gained 10.6 per cent in September and shipments increased 12.8 per cent. Stocks declined 6.1 per cent.

"Production, consumption and stocks of mechanical wood pulp declined in September. Chemical pulp gained 4 per cent in production and 6.5 per cent in consumption and shipments while stocks declined 8.1 per cent.

A card has just been received by the editor from our friend "Billy" Whyte, who mailed it from Kristiania. Judging by the picture, it is quite some town.

SOME PROBLEMS OF THE SULPHATE PULP INDUSTRY.

Utilization of Lime Sludge.

By CARL MOE, Minnesota & Ontario Paper Company.

One of the problems of chemical pulp mills, using the alkaline process of pulping, is disposal of the lime sludge. There are four ways conceivable by which this by-product may be disposed of, viz:

1. Washing it out in streams or rivers.
2. Piling it on the ground and leaving it there.
3. Reclaiming it by incineration and using it over again.
4. Utilizing it for other purposes.

The first is the most convenient one and probably the one most universally employed. But the contamination of streams and rivers with caustic lime sludge is likely to kill the fish and also make the water unfit for drinking, although this contention has not been proven. In certain states it is prohibited to polute rivers in this manner.

The second method requires considerable ground, according to the size of the plant. If there be a low tract of land available for the purpose close to the mill, the sudge may be conveyed through a system of pipes or open spouts or ditches. Where the location is not favorable for this, it has to be hauled away in specially constructed wagons or cars.

There is no sulphate mill in this country, as far as the writer knows, using reclaimed lime for causticizing, although several soda mills are reported to do so with advantage.

Of other uses for lime sludge there is one which deserves more consideration than it has been receiving in the past. Although it has been recommended decades ago to utilize it as a fertilizer, it seems that very few have acted on this recommendation, notwithstanding the fact that as a dressing for acid soil it stands unexcelled. The writer had the opportunity to observe a striking demonstration of this last summer. Robert K. McDonald, a business man of Stevens Point, Wis., has a model dairy farm right outside that city. The soil around there has a decidedly acid character, and it is customary to apply commercial limestone. Mr. McDonald decided to try an application of lime sludge from a sulphate mill near by—Stevens Point Pulp and Paper Company for comparison. He had reasoned out that the impalpable character of the sludge ought to make it many times more effective than the coarse commercial limestone. In the fall of 1920 he applied first a top dressing of manure and then with a manure spreader he covered about 27 acres with lime sludge in a ration of approximately 4 to 5 tons of moist sludge to the acre. This field was prepared in the usual manner and planted with corn in the spring. On another field he applied sludge to about 5 acres, which were subsequently planted with clover.

The effect of the application of lime sludge on the corn field has been noted in a case where rows were planted which had not been limed while close by others were planted to which commercial limestone had been applied, and in this case it was seen that commercial limestone had no perceptible influence on the growth, whereas, in another case where the same comparison was made, lime sludge being used instead of commercial limestone, the advanced development of the plants was quite remarkable. When the writer visited Mr. McDonald's farm the latter part of August it was just after harvesting time, and he had then the opportunity to note just as marked a difference between the ears of corn from the field with sludge application and those from the field without sludge application. The latter were green and undeveloped, while the former were full and ripe. It had been an exceptionally dry spring and summer and it had not rained for months, but the soil where sludge had been applied was quite moist a couple of inches underneath the surface, and on no other place had mature ears been developed.

The appearance of the clover fields showed a similar difference. At the places where sludge had been applied the growth was more or less luxuriant, while at places with no sludge application it was scanty.

PUBLISHERS ASSUME CONTROL.

The Watertown office of the Newton Falls Paper Co. has moved to the mill at Newton Falls, N. Y. The mill is now producing 40 tons daily of supercalendered book paper for the use of the owners, the McGraw Hill Co., Inc., and the United Publishers' Corporation, both of New York City. Mr. Arthur J. Baldwin, vice-president of the McGraw Hill Co., has been elected President of the Newton Falls Paper Co., and Mr. Harry D. Eliason, vice-president and treasurer.

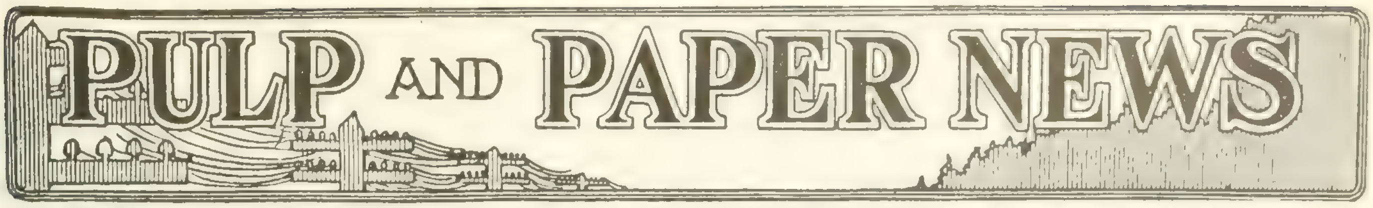
The proceedings of the Third Annual Paper Conference at Chicago, have been printed in pamphlet form by the American Paper and Pulp Association. Copies may be obtained from the office of the Association, 18 East 42nd Street, New York City.

The effect of hand to mouth buying by jobbers and retailers in the last few months is noticeable in the stearily advancing market prices of paper. That tendency is marked in practically all branches of the paper trade and is expected to continue for considerable time, according to reliable sources. Even cheaper grades of waste paper material are included in the advance.

With more forest fires reported in New York and other Eastern states as well as Canada last year than for the last thirty previous years, the losses were trifling in comparison as a result of the promptness and efficiency with which they were controlled through protective operations, according to a report made public last Thursday by the New York State Conservation Commission. In the Empire State there were 720 fires reported with a total loss of $49,920, as compared with a loss of $850,000 from 645 fires in 1903, and $800,000 loss from 600 fires in 1908, before the present system of fire protection was established. The area burned in 1921, as compared with previous years, gives testimony of the manner in which the fires handled by the State's protective force. The area burned in 1921 was 25,420 acres, as against more than twice as many acres in 1913.

Solomon said, "Poverty and shame shall be to him that refuseth instruction." Solomon would have ordered a set of Textbooks on the Manufacture of Pulp and Paper. The editor will give particulars.

Mr. F. W. Kellogg, business manager of the Los Angeles "Evening Express", makes the statement that his paper has no fault to find with Norwegian paper recently imported, but that action has been brought against the steamship "Asia" for improper handling of the shipment.



PULP AND PAPER NEWS

The unemployment situation in Toronto is serious at present, and is bound to become increasingly so as the cold weather comes on. Outside the textile and building trade industries, there are few callings indeed which are furnishing full time employment to those working in them. The number of totally unemployed men in the city was estimated last week at 10,000. But this is likely a low estimate. Moreover, the greater number of workers are only working two, three and four days a week — and employment of this kind suffices for little more than just keeping off the wolf from the door. Moreover, the situation is getting worse with marked rapidity. At least 100 men are being added daily to the totally unemployed. These are men who have come back from harvesting in the West or who are drifting into the city from outside points in Ontario, from farms and other seasonal work. Further, there will be a large addition to the ranks of the unemployed as soon as ever construction work stops, that is to say, when the cold weather sets in in earnest. By far the greater number of the unemployed have absolutely no resources of any kind on which to fall back, when they are thrown out of work. As things look at present, this Winter in Toronto will be one of considerable hardship and distress.

Premier Drury has informed Local 91, International Typographical Union, that the Ontario Cabinet is prepared to hear the proposal of the Union that Government printing carry the Union label. The date set for the hearing is the 24th inst. During the summer, the Union committee asked the Government to insist that its printing carry the Union label, giving as instance the arrangement existing in Dakota. The Union's motive, in making this request, is to force a settlement of the strike from several large firms with printing contracts with the Ontario Government.

The Manitoba Power Company has the distinction of being the first notable hydro-electric development of any consequence in Canada under private ownership principles since the war. The plans of the company provide for an ultimate capacity of 168,000 horse power, the first installation to provide for 56,000 horse power. Fraser, Brace & Co., Ltd., in conjunction with the Northern Construction Company, are in charge of the work. The fact that it will be carried out under the supervision of Mr. Julian C. Smith, vice-president and general manager of the Shawinigan Water and Power Co., Ltd., is a guarantee that it will be well done, as Mr. Smith is generally recognized as a very high authority on power installations.

The last week was "Authors' Week", and, in consequence, in very many directions, Canadian authors and their work were brought prominently before the Canadian public. The newspapers, the stores, and many social organizations vied with one another in the attempt to ensure that these Canadian prophets should not be without honor in their own country.

On the 16th instant, officials of the Riordon Company, Ltd., appeared in the Superior Court, in Montreal, before Mr. Justice Duclos, to testify as to their relations with the Ticonderoga Pulp and Paper Company, of Ticonderoga, N.Y., which is being sued by Mr. Percy Cowan, of the Montreal brokerage firm of MacDougall and Cowan, for a sum of over $102,000, the amount alleged to be due on two promissory notes. The Ticonderoga Company denied responsibility for the notes in question, claiming that they had been issued without the knowledge, or authority, of the Company's directors. The notes, it is stated, were issued on the 22nd April, 1921, and were for $50,000 each, interest thereon making up the balance of the claim.

The library department of the Canadian National Institute for the Blind aims at publishing Canadian literature for the blind which will create a Canadian spirit and educate the sightless to a fuller knowledge of their own country. This library, located at 142 College Street, Toronto, is the only one in Canada operating its own press in the publication of books in Braille. The press was presented to the library last April. At present, it is printing "When Canada Was New France," by Dr. George H. Locke, Toronto's chief librarian. The library, which is a circulating and distributing centre for the whole Dominion, catalogues 10,000 volumes in English, French and German, printed in Braille.

Tenders will shortly be called for the extension of the Temiskaming and Northern Ontario Railway for a distance of some seventy miles through a country abounding in pulpwood which, by this means, will be rendered more readily accessible. The extension will likely result in the establishment of some new pulp and paper mills in this territory.

At the inaugural meeting of the Empire Forestry Association, held at the Guildhall, London (Eng.), last week, a resolution was passed urging the extension of a constructive forestry policy to all parts of the British Empire, for the purpose of the scientific conservation and prudent exploitation of the Empire's timber resources for the Empire's benefit. The resolution was seconded by Sir George Perley, Canadian High Commissioner in England.

It was announced, last week, that Mr. F. P. Jones has resigned from the Executive Committee in charge of the Riordon Company, Ltd. During the last few months, Mr. Jones has devoted a great deal of time to the affairs of the Riordon Company, and has succeeded in bringing the Company's position down to a basis where it can be dealt with.

It is expected that Messrs. Brady and Kinsky, organizers for the International Typographical Union, will be in Toronto next week, to continue their efforts for a settlement of the printers' strike. Mr. Brady plans to bring the employing printers of Toronto, Hamilton and Ottawa together for negotiations.

Mr. V. [illegible] of the Belgo Industrial Co., who has severed his connection with the above firm left on Tuesday for Schenectady, N.Y., where he will take a special course before returning to his home in Belgium.

Technical Section

REVIEW OF RECENT LITERATURE.

A-4; A-5. **Moisture Testing of Woodpulp.** Report of the T.A.P.P.I. Committee on Standard Methods of Testing, E. C. Tucker, chairman. **Technical Association Papers,** Series IV (June, 1921). Rules and regulations are submitted concerning the testing of pulp shipments for moisture, based on the work already done by the T.A.P.P.I., the Association of American Woodpulp Importers, the Scandinavian Woodpulp Association, and the Technical Section of the C.P. & P. A.; recommendations are also made concerning conditions not already provided for.—A. P.-C.

A-4; F-0. **Strength Testing of Soda Pulp.** RALPH MAIR and GRELLET N. COLLINS. **Technical Association Papers,** Series IV (June, 1921). Tests on bleached and unbleached gum and popular pulp have brought out the following points: Drying the stock before testing gave lower results in the case of both bleached and unbleached pulp. In general there is an increase of strength up to 35 min. of beating in the Abbe ball mill; but with longer beating the sheets lose their bidrous characteristics and show the effects of parchmentizing, so that no fair comparisons can be drawn from results obtained with more than 35 min. beating. Bleaching does not weaken the pulp when it is preserved in the wet state; but if it is dried before testing there is a decrease in strength after bleaching. The results obtained in determining the effect of the beating time plotted, but the curves obtained were irregular owing to the weak points in the method of testing, which are: inequality of the sheets made with the suction box form, personal equation of the operator both in making and in testing the sheets, varying conditions under which the sheets are air dried giving different moisture contents. Considerable refinement in the method is required to obtain absolute results; and at present two pulps can only be compared in a fair way provided they are in the same condition.—A. P.-C.

A-15; L-5. **Cellulose Dextrins.** M.SAMEC and J. MATULA. **Kolloid-Chem. Beih.,** xi 37-73 (1921); **J. Soc. Chem. Ind.,** xl, 429A (June 30, 1921). Sulphite cellulose is not completely dissolved by 50 percent sulphuric acid, whilst 86 percent sulphuric acid chars it. Solutions of cellulose in sulphuric acid (50 to 85 percent) are at first colorless, but on keeping they speedily become colored. As the degradation of the cellulose becomes greater the coloration produced by iodine changes from blue to violet, then to various shades of brown, and finally disappears; the relative viscosity rises to a maximum and then falls as the swelling and solution increase. In the degradation, dextrins are produced, some of which are soluble in water whilst others are insoluble. The insoluble products are destroyed by sulphuric acid (60 percent and over) within the first half hour. As the degradation proceeds the following changes are observed successively: the dextrin esters are gelatinized by alcohol and the dextrin is precipitated; the dextrin esters and the dextrin are both insoluble in alcohol; the dextrin esters are soluble, the dextrins are insoluble in alcohol; both dextrin esters and dextrins are soluble in alcohol. Phosphoric acid of a greater concentration than 75 percent at ordinary temperatures forms a colorless, very viscous jelly with cellulose which is only slowly changed at this temperature, but at higher temperatures a slow degradation occurs and eventually the solution becomes brown or black. The action of sulphuric acid on cellulose depends not only on the concentration of the acid but also on the relative quantities of acid and cellulose. With a sufficient excess of acid dialyzable dextrins are produced in the first quarter of an hour and at the same time the molecular weight of the collodial residue is reduced. The degradation of both dialyzable and non-dialyzable portions proceeds further by continued action of the acid until after five hours the mean molecular weight of the most coarsely disperse portion is 2400. At the same time the $-SO_4H$ group enters the molecule with the formation of esters. Diastase is capable of converting some of the dextrins produced into fermentable sugars.—A. P.-C.

A-0; R-13. **Analytical and Testing Methods of the Technical Association of the Pulp and Paper Industry.** E. C. TUCKER, chairman of the Committee on Standard Methods of Testing Materials, **Technical Association Papers,** Series IV (on sale by Secretary of T. A. P. P. I., 18 East 41st Street, New York), June, 1921. Methods of analysis and sampling are recommended for bleaching powder, aluminum sulphate, cotton rags, and crown filler. **Bleaching Powder.** Ten percent of the casks should be sampled on receipt of the shipment, by driving a three-quarter inch brass tube through the cask from end to end, transferring the powder to a quart Mason jar, sealing immediately, and quartering the composite sample from the various jars as rapidly as possible in the laboratory. The thiosulphate method is recommended for available chlorine on account of greater convenience than the sodium arsenite method, while it is equally accurate if properly carried out. A test is given for determining the quality of the powder for producing bleach liquor, which consists essentially in preparing a solution of the powder in water under specified conditions, allowing the sludge to settle to the bottom, and titrating the available chlorine in the clear liquor. For determining chlorides, the liquor is boiled with ammonia, acidified wth nitric arid, excess of decinormal silver nitrate solution added, the precipated silver chloride filtered and washed, and the excess of silver nitrate in the filtrate titrated with standard thiocyanate solution. From the total chloride thus found, the hypochlorite found previously is subtracted. For determining chlorate, the solution is boiled with ammonia, reduced by passing a current of SO_2 through the boiling solution for a few minutes, acidified with sulphuric acid, the excess of SO_2 neutralized carefully with permanganate, and the total chloride determined with silver nitrate and thiocyanate as above. The chlorate is calculated subtracting the chloride and hypochlorite previously found. **Aluminum Sulphate.** If the shipment is in packages, samples shall be drawn from 5 per cent of them, and mixed and ground to form a composite sample; if in ingots, fragments chipped off from 12 ingots taken at random shall be taken as a representative sample. Insoluble matter is determined by dissolving 10 Gm. in hot water, filtering on a Gooch or alundum crucible, and drying to constant weight. Alumina and iron oxide are determined on an aliquot of the above filtrate representing 1 Gm. of the original sample by diluting to 200 Cc., adding 5 Cc. concentrated hydrochloric acid and a few drops of concentrated nitric acid, heating to boiling, adding freshly distilled dilute ammonia drop by drop with constant stirring until a slight excess is present, boiling one minute, allowing to settle, filtering, washing with dilute ammonia and ammonium nitrate, redissolving in hydrochloric acid, oxidizing with a few drops of nitric acid, reprecipitating, filtering and washing as before, and igniting to constant weight over a Meker burner or a blast lamp. Sulphate is determined in the usual manner by precipitating with barium chloride. The filtrate from the alumina determination should be used, as the barium sulphate carries down appreciable amounts of aluminum when it is present in quantity. To determine iron, 5 Gm. of the sample are dissolved in 100 Cc. of hot water, 5 Cc. concentrated sulphuric added, the solution is heated nearly to boiling, permanganate is added drop by drop to a permanent strong pink to oxidize any reducing matter which may be present, the solution is passed through a Jones reductor in the usual manner, cooled, titrated with standard potassium permanganate solution, and the rsults calculated to Fe_2O_3. The basicity or acidity of the aluminum salt and the combined alumina are determined by Scott's method (See **J. Ind. & Eng. Chem.**, vii, 1059, Dec., 1915). **Cotton rags.** The normal moisture content of baled rags should be fixed at 8 per cent. Wherever possible, sampling is to be carried out by putting 10 percent of the shipment through the rag room promptly after arrival, one pound being taken from each bale as it is opened and put through the thrasher, making the samples as representative as possible, and the samples dried to constant weight at 100° cent. When it is not possible to use 10 per cent of the shipment promptly on arrival, 10 percent of the shipment is sampled by drawing one pound from the side of each bale, getting into the bale as far as possible, and the composite sample thus taken dried as above. **Crown Filler ($CaSO_4 2H_2O$).** Specifications recommended are: packed in clean wooden barrels lined with a clean wrapper; color pure white, equal when dried out to C.P. $CaSO_4 2H_2O$, tested purity, not more than 33 percent total water; not more than 15 percent mechanical water; acidity as received not more than 0.05 percent calculated as hydrochloric acid titrated with caustic soda using methyl orange as indicator; free from dirt and iron. Ten percent of the shipment is sampled by boring through the side of the barrel with an auger and extracting the sample with a trier. Moisture is determined by igniting 1 Gm. in a platinum crucible to constant weight. The combined moisture is calculated according to the formula $CaSO_4 2H_2O$, and the remainder is mechanical water. For determining color, some of the dried sample is compared with standard C.P. calcium sulphate by north light. About 3 Gm. each of the standard and of the sample are placed on a sheet of black paper with a straight line division, a sheet of paper is placed over the samples and a penknife is drawn over the paper in the direction of the line of division to smooth the samples; the sheet of paper is removed and the colors are compared. The acidity is determined on 2 Gm. by titration with 0.02 normal sodium hydroxide solution using methyl orange as indicator, and is calculated to hydrochloric acid. The dirt is determined by dissolving in C.P. concentrated hydrochloric acid, diluting, filtering, and comparing the residues left on the paper with similar residues from a standard sample or from previous shipments.—A. P.-C.

E-1. **Analysis of Sulphite Cooking Acid.** ERIK OMAN, **Teknisk, Tidskrift, Kemi och Bergavetenskan,** 1915; **Technical Association Papers,** IV, 1, 61-69 (June, 1921). Translation by Carl L. Fineman and W. E. Byron Baker. A critical review of various methods used for the works control of sulphite cooking acid, with a description of two new methods worked out and tested by the author. The two unknowns to be determined are SO_2 and CaO, SO_3 being unimportant from a cooking point of view. Mitscherlich's method (determination of the specific gravity in terms of degrees (Baumé), Winkler's method (titration of total SO_2 with iodine and of free SO_2 with sodium hydroxide and phenolphthalein in separate portions of the sample), Höhn's method (determination of total SO_2 with iodine and free SO_2 with sodium hydroxide and phenolphthalein in the same portion of the sample), and Stroeb's method (titration with sodium hydroxide using first methyl orange and then phenolphthalein) are shown to be inaccurate even for works control. Determination of SO_2 by titrating the acid into iodine gives the same results as precipitation as barium sulphate, the error not being greater than ± 0.4 percent of the SO_2 present. If the iodine is titrated into the acid the error is —0.8 percent. The following four methods for the determination of lime have been investigated and found unsuitable: (1) evaporating the free SO_2 on a waterbath and titrating the combined SO_2 with iodine; error —35 percent. (2) Expelling the free SO_2 by boiling in vacuo and titrating with iodine; error + 30 percent to + 40 percent. (3) Adding an excess of hydrochloric acid, evaporating on a waterbath, and determining chlorine; the results were concordant, but too low; error 6 to 19 percent. (4) Adding an excess of 0.1 normal sulphuric acid, expelling SO_2 on the waterbath and titrating the excess of sulphuric acid with 0.1 normal alkali; error —50 percent owing to the oxidation of the SO_2 to SO_3. Oman proposes determining total SO_2 by iodine and the specific gravity by means of a sensitive hydrometer and obtaining the lime content from a previously prepared table. A correction must be applied for the sulphate content of the acid. The error is probably not more than 4 to 5 percent of the lime. The method can be used for raw acid but not for acid containing relief gases or relief liquor. Oman also proposes the following method: 30 Cc. ammonia are added while stirring to 100 Cc. of the clear liquor; after fifteen minutes it is filtered and the precipitate washed three times with 50 Cc. of 15 percent ammonia each time. It is washed into a 500 Cc. volumetric flask, dissolved in 10 Cc. of concentrated hydrochloric acid, diluted to 500 Cc., shaken, and the solution titrated by running into 10 Cc. of 0.1 normal iodine, using starch as indicator. The method was tested on both pure and commercial liquors in which lime had been determined gravimetrically, and the maximum errors were + 10 percent, + 20 percent, and + 2.5 percent for Winkler's, Höhn's and Oman's methods respectively. (For criticism of this method see "Analysis of Sulphite Acid," by A. Sander; translated by Clarence Jay West in **Paper** xxvii 17, 21-23, Dec. 29, 1920).—A. P.-C.

E-1. **Control Analyses of Sulphite Cooking Acid.** PETER KLASON, **Svensk Pappers-Tidning,** xxiii, 11 and 12; **Technical Association Papers,** IV, 1, 71-76

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UNITED STATES NOTES

Henry Ford, manufacturer of the popular priced motor car bearing his name, has turned his attention among other things to a practical method of forest harvesting. According to a report from Iron Mountain, Michigan, Mr. Ford is experimenting on a section of timber land two miles from Sidnaw, Mich., where he is putting into execution a plan that may well revolutionize the industries depending upon forests for the basic raw materials. The method is to remove from the tract only the mature trees. Underbrush and waste wood left are to be carefully cleared to protect the remaining trees against fire. The young trees will be permitted to attain maturity. In the meantime they will seed the ground about them, and when they, in turn, are cut, the next crop will have been started. Thus harvests may be made in each of a period of years indefinitely. Sufficient space is left between the growing trees to permit their rapid development. E. G. Kingsford, a member of a Ford company, says concerning the venture and its possibilities: "Mr. Ford is convinced that the public interests demand a fundamental change in treatment of our forest wealth. The inevitable result of the present system will be the denuding of our forest lands. As this denuding continues woods products costs will advance steadily. Finally, denudation will be carried to the point where the need of remedial measures will be realized everywhere. At that time reforestation will be the only hope for the future, and this is a slow and expensive process. The harvesting of trees is a practical alternative. In our present test we cut trees with a minimum diameter of ten to twelve inches."

Increased activities in the pulp and paper mills of the South, as well as in other sections of the country, were reported by Arthur G. Caldwell of the Orr Felt and Blanket Company, Pigua, O., who reached New York last week after having concluded a tour of the principal centres of the country, particularly those below the Mason and Dixon line. Mr. Caldwell says that conditions generally appear to be improved noticeably over six months ago. Most of the mills in the South, he says, are now running on full time or are approaching that condition.

A giant merger, consolidating the King Paper Company and Monarch Paper Company, of Kalamazoo, and the Bardeen Paper Company, of Otsego, was virtually effected at a meeting held early last week in the offices of the Kalamazoo City Savings Bank, Kalamazoo, Mich. The combine will be operated in future under the name of the Allied Paper Mills, and it brings under one management property and plants totalling a valuation in excess of $6,000,000. While the consolidation was culminated through ratification by the directors of the several companies involved, its legality remains to be effected through vote of the stockholders. The combined plants will have a maximum daily capacity of 350,000 pounds of finished paper, while the coating divisions, now the largest of any coated paper concern in the world, can produce about 125,000 pounds of coated stock in twenty-four hours. A. L. Pratt, who has been at the head of the King Paper Company ever since that concern's inception, has been chosen president of the consolidated company. Mr. Pratt is widely known in the paper-making field, being a vice-president of the American Pulp and Paper Association. A. L. Gilman, general manager of the Monarch Paper Company and George H. Gerpheide, secretary and manager of the Bardeen Company, will be vice-president of the Allied Paper Mills. George S. Davis, for many years secretary of the King Paper Company, will be the secretary of the new company. S. B. Monroe has been selected for the place as treasurer. Mr. Monroe is treasurer of the Hawthorne Paper Company and the Mac Sim Bar Paper Company, vice-president and general manager of the Bardeen Paper Company, president of the Northern Michigan Pulp Company, and also a director in several other concerns, including the Provincial Paper Company of Canada.

Prominent in the Japanese Commission of business men now visiting the United States is Ginjiro Fujihara, president of the Oji Paper Manufacturing Company, Tokio, Japan. Prior to his departure for Washington, November 19, Mr. Fujihara with his secretary, Mr. Fukukita, purchasing manager of the Oji Company, and H. B. Wadsworth, manager of the Meishosa Company, visited Albany and Schenectady, making an inspection at the same time of some of the paper mills in the vicinity of Glens Falls.

The Union Bag and Paper Corporation announced last week the declaring of a quarterly dividend of 2 per cent., payable December 15, 1921, to holders of record at the close of business, December 5, 1921.

A wage cut of approximately ten per cent was put into effect at the DePere plant of the American Writing Paper Company last week. It was the second reduction since the end of the war and places wages about on the basis of June, 1919. The mill resumed operations recently after a short period of idleness, and has enough orders to keep it going for over a month. Other mills in the Fox River Valley made wage cuts several weeks ago.

Twenty-two former employes of the Livermore Falls plant of the International Paper Company have been found guilty of conspiracy to injure the company's property. Justice John A. Morril, of the Supreme Court at Lewiston, Maine, who found the decision against the workers, also enjoined the paper workers, forbidding interference with the company's business, inducing others not to deal or contract with the company, interference with free access of the company's employes to its mills, or intimidating, annoying or insulting the employes in any way.

Following a successful meeting, held at the Boston City Club a week ago, the New England Paper Merchants' Association elected the following officers for the ensuing year: President, F. Bendel Tracy, Fort Hill Paper Company, Boston; vice-president, Joseph D. Snell, Von Olker-Snell Paper Company, Boston; treasurer, Albert M. Eaton, A. M. Eaton Paper Company, Waltham, Mass., secretary, Floyd H. Blackman, D. F. Monroe Company, Boston.

(Continued from page 1195)

(June, 1921). Detailed investigation into the accuracy of Winkler's and Höhn's methods for the analysis of sulphite liquor. The results showed that both methods are based on correct conceptions, that the basic reaction of the sodium sulphate does not perceptibly affect the titration, and that both methods give identical results. The errors which occur must be attributed to the analytical chemist, his titration solutions, his readings, and, last but not least, his sampling. Samples should never be taken by suction; the acid should always be pressed up into the pipette.—A. P.-C.

H-5. **Solution of Bleaching Powder.** M. CHAMPION, **Bull. Soc. Chim. Belg.,** xxix, 24-28 (1920); **J. Soc. Chem. Ind.,** xl, 431A (June 30, 1921). Mixtures of bleaching powder and water containing from 1 to 20 percent of the former were shaken for three hours, allowed to settle, and in the clear supernatant solution the active oxygen, total chlorine and calcium, and the density were determined. If the concentration exceeds 4 percent there is a risk of some of the active oxygen being retained in the residual sludge from the preparation. The figures on the whole show rather higher proportions of calcium and total chlorine to active oxygen than those required by the formula Cl.CaOCl.—A. P.-C.

K-12. **Fulton System of Drying Paper.** WILLIAM B. FULTON, **Technical Association Papers,** Series IV (June, 1921). The main objects to be attained in the efficient drying of papers are: (1) Rapid circulation of steam through the driers; (2) rapid removal of the air and condensate; (3) economical consumption of steam; (4) graduation of temperature on the machine. The rate of heat transfer from the steam to the sheet through the shell driers depend on: (1) thickness of the drier shell and nature of the metal; (2) film of oil and water adhering to the inner surface; (3) air contained in the drier; (4) rate of circulation of the steam and condensate. In the Fulton system a difference in pressure is maintained at all times between the driers and return header, thereby causing a rapid flow of steam through the driers which carries the water of condensation and the air with it. The steam from the dry end of the driers is passed through a separator and is then passed on to the wet end of the driers. At this end all the steam is condensed, and the accompanying drop in pressure causes rapid circulation and high velocity through the dry end of the machine. The condensate and air are removed from the driers of the wet end by means of a vacuum pump. The Fulton system is said to make it possible for mills to decrease their steam pressures 44 percent and 52 percent, also increasing their production 7.4 to 15 percent while some mills are said to cut their steam pressure 44 percent and have decreased their coal consumption 25 percent.—A. P.-C.

K-12. **Ventilation of Paper Machine Rooms.** W. H. HOWELL, Jr. **Technical Association Papers,** IV, 40-42 (June, 1921). In the Briner economizer the hot moist air from the paper machine hood is used to warm up the cold incoming air, the exchange of heat taking place through corrugated plates. Two auxiliary coil fan heaters are provided for taking care of heating on Sundays and during a shutdown. In an actual mill test of the apparatus, the economizer raised outdoor air (at 34° Fahr. and practically 100 percent humidity, during a wet snow storm) to 107° Fahr. in sufficient quantity for all ventilation purposes, the heat units economized being equivalent to 77 b.h.p. continuously for twenty-four hours, without the use of steam. There was a condensation of about 300 gallons per hour. In this particular case, assuming coal at $10 a ton as fired, the net saving is estimated at $26.20 a day. The amount of waste heat going through the roof of paper machine rooms is about five b.h.p. per ton of paper per twenty-four hours.

K-12. **Paper Mill Electrification.** STEPHEN A. STAEGE, **Technical Association Papers,** IV, 1, 30-34 (June, 1921). General discussion of the advantages of electrifying paper mills, as regards laying out of buildings (for a new mill under construction), maintenance of the equipment, power losses, personal and fire hazard, paper machine drive, heat balance, determination of the load at all times by means of indicating and recording instruments, pulp grinder load regulator, preparation of electrolytic bleach ,and use of portable electric welding outfit.—A. P.-C.

K-23. **Imitation-Leather Papers.** P. MILLER, **Papeterie,** xliii (June 10, 1921). Practical notes on the coating of paper for the manufacture of imitation leather.—A. P.-C.

N-4. **Burning of Pulverized Fuel in Paper Mill Power Plants.** LOREN L. HEBBERD, M.E., **Technical Association Papers,** Series IV (June, 1921). A general exposition of the advantages of using pulverized fuel in paper mill power plants, both in new mills and in old mills at present operating with stokers, with estimates of costs and savings. The discussion which followed the presentation of the paper is also given.—A. P.-C.

N-4. **"Bergeon-Frédet" Steam Boiler.** G. A. MAILLET, **Papeterie,** xliii (June 10, 1921). A description the 5,000 h.p. electric steam boilers recently installed at the Frédet paper mill at Brignoud (Isère. and of its methods of operation. It consists of a horizontal shell of sheet steel, the size of which is calculated from the amount of steam required and the variations in the loads. The electrodes enter the boiler through specially designed and patented fused silica insulators, which make a steamtight connection. Each one of the electrodes is in an evaporation chamber consisting essentially of a vertical dome which extends down into the body of the boiler some distance below the electrode The steam is drawn off from each chamber into a common line which goes back into the mail steam space of the boiler, from which it is drawn off in the usual manner through a separator. The pipe connecting the evaporation chambers to the main steam space of the boiler. from which it is drawn off in the usual manner through a separator. The pipe connecting the evaporation chambers to the main steam space of the boiler is fitted with a valve by means of which the production of steam is regulated. If the valve is closed slightly, the pressure in the evaporation chambers is raised slightly and consequently the water level in the chambers is lowered. The degree of immersion is thereby decreased, and also the production of staem. If the valve is shut off completely the water is driven completely out of the chambers, and as the electrodes no longer plunge in the water all generation of steam is stopped.—A. P.-C.

N-6. **Steam Economy in Paper Mills.** R. W. LEEPER. **Technical Association Papers,** Series IV (June, 1921). Report of the T.A.P.P.I. Committee on Light, Heat and Power. Discussion of the economical operation of steam prime movers in paper mills according to the nature and arrangement of the prime movers, showing the total annual cost of steam per ton of daily production for various arangements. The discussion which followed the presentation of the paper is also given.—A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 19th Nov. — The better tone exhibited lately by the pulp and paper industry has been well maintained during the past week. Several of the more important mills are reported to be operating to full capacity. Others are increasing their output. Buying is steadily improving, and it is all to the good, so far as stability is concerned, that none of this is of the speculative kind. Demand for most lines of paper is brisk. Prices are steady, and they are at such a level as ensures a reasonable profit on the products of the mills. That, with the assent of the creditors, a way has now been found to keep the Riordon concern in operation on a satisfactory basis, is a circumstance which will sensibly contribute to the security and stability of the industry as a whole. As has been previously pointed out in this column, the pulp and paper industry is one of the most important units of the industrial fabric of Canada. Had one outstanding member of this important unit been suffered to collapse entirely, the effect on the whole unit would have been harmful. On the whole, the outlook may be regarded as bright. Business is not only better, but the betterment looks likely to be a permanent one. Such is the general opinion among those prominent in the industry, with practically no dissential voice. In every branch of the industry operations are expanding, and the character of the expansion is such as to augur well for the future. It should, in fairness, be added that the practice of "under-cutting" on the part of jobbers, of which mention was made, some few weeks ago, in this column, is now, by all accounts, far less indulged in than it was then. This is all to the good. In fact, looking in nearly every direction, it seems as though the clouds — and some of them pretty black ones — which were overhanging the industry so recently have either dispersed or are in process of dispersal.

PULP. — The mechanical pulp market is more encouraging, and the demand is somewhat better. Chemical pulp is showing a more decided improvement, but sellers are holding off somewhat for better prices than they can get now. At present prices that buyers are willing to give (Canadian mill and in Canadian funds) are as follows: easy bleaching, $60 a ton; extra strong, $62.50 to $65 a ton; news grade, $55 a ton. There is a fairly good demand for kraft pulp and also for strong bleached. The news that the Kipawa plant of the Riordon Company is gradually increasing its output is in harmony with the better tone which the pulp market is certainly evincing. A certain stiffening in prices is regarded as probable. On the whole, the pulp outlook, while nothing to boast of as yet, is still distinctly brighter than it has been for some while.

NEWSPRINT. — The production of newsprint continues to increase. Some mills have enough business on hand to keep them employed at capacity, or near capacity, well into the New Year. Exportations to the United States are increasing in size. The Dominion election campaign has contributed, in many ways, to the livlier demand for newsprint, and not least by reason of the fact that, owing to the interest taken in it, many of the daily newspapers have substantially increased, in both size and circulation. One big publisher, with whom the writer was talking this week, expressed himself as dissatisfied with present prices, which, he maintained, were still too high. But the publishers' view of this question is not apt, as a rule, to be especially emprejudiced. Most of them have doubled the price of their own publications of late years, but seem to expect to be able to buy newsprint at something like pre-war prices. There are newspapers in Toronto which are literally coining money just now. The volume of newspaper advertising is good for this fall season, and if any of them is not making money the fault must be with its methods. A large concern has announced, it is said, a price of $75 per ton for January—March.

BOOK AND WRITING PAPERS. — The demand for book and writing papers is lively and plants are running full time. This is satisfactory in a wide and general sense, inasmuch as it indicates that retail commercial conditions are improving.

FINE PAPERS. — A more optimistic tone prevails with regard to fine papers. Business is picking up, and indications for the future are favorable. But the improvement in this line is not so marked as in some others — a circumstance which is natural enough in respect of a commodity which is less an essential than are some other lines of papers.

WRAPPING PAPERS. — The demand for practically all kinds of wrapping papers is good, and will certainly get more active as Christmas approaches. Indeed, from now on, business in these lines will be as brisk as can be. Talking with the representative of a large kraft mill, the writer was informed that the demand for kraft was excellent and that prospects are, in every way, most encouraging. Sales have recently been effected of some large quantities of kraft, and production is being speeded up.

TOILETS AND TISSUES. — Toilet and tissue mills are running full time. The demand for both is good and the outlook satisfactory.

BOARD. — The improved demand for nearly all kinds of board continues. Plants are busy and prospects look good. This is particularly gratifying as, for a long period, board mills were very markedly inactive.

RAGS AND WASTE PAPERS. — As has been noted recently, the rag and waste paper trade is now quite active. Complaint is heard to the effect that it is difficult to obtain stocks. The plaintive appeal of the rag collector is now being heard with a good deal more frequency on the Toronto streets. The demand for waste paper is far brisker than was the case a few weeks ago, and, as a consequence, prices in some lines have gone up. Hard white shavings seem to be most in demand.

NEW YORK MARKETS.

New York, November 19.—(Special Correspondence)—Trading in paper of most grades has slowed up somewhat this week in New York. The market as a whole displays no important change, but reports from representative merchants and mill agents in this city have been that buying has been of smaller volume than in quite a while, this being due, it is pointed out, to a combination of circumstances. One reason for the quieter position of the market is, that recent fairly heavy purchases have put consumers in a way where they have requirements supplied for a time, and therefore, are not obliged to continue buying in the same ratio, that has lately marked their operations. Another reason is that a good many consuming industries have experienced a slowing down of activity in their own products, thus reducing the need for paper. Nevertheless there is, in the aggregate, a comparatively good business current in paper of all kinds. Demand in many cases may lack the snap that characterized it up to a few days ago, yet buyers on the whole continue to operate in sufficient number and in large enough volume to give the paper market a fairly lively appearance.

There seems no question that manufacturers and merchants in all parts of the States and producing and handling all manner of articles are endeavoring to reduce stocks of both finished and raw materials to as low a point as they can for the approaching inventory-taking at the end of the year. The probabilities are that most concerns will show in their annual reports that the year 1921 was far from a favorable year, and that with a view of making reports as attractive as possible, stocks will be worked down to a minimum between now and the time to compile inventories. This will undoubtedly result in a slowing up process in many lines of business; in fact, many attribute the quieter demand for paper during the past few days largely to this factor. On the other hand, opinion is common that as soon as the old year passes out and inventories have been figured that demand for various commodities will materially increase almost at once, especially since stocks of raw and finished goods will have been brought down low, thus making for a period of brisk business activity. Everyone in the paper trade is decidedly confident about the outlook, and many predictions are openly made that January will witness a sharp revival in the industry, from the gatherer of raw material of which paper is manufactured to the jobber who distributes the products of the mills.

The newsprint trade continues to be one of the high spots in the industry at present. There is a consistently good demand for print paper, and proof is not wanting that most of the supply moving from mills to publishers is going direct into consumption. The consumption of newsprint is steadily mounting. As the Christmas holidays draw nearer, department store and other retail advertising in the daily newspapers is increasing rapidly, and publishers consequently are using more stock to print on. Prices are steady to firm, with spot lots of standard newsprint in rolls selling at around 4.25 cents, with now and then a sale reported at higher than this figure.

A report issued this week states that the International Paper Company is steadily increasing its production of newsprint and that it is now turning out 800 tons of paper daily two-thirds of the company's normal output . Plans call for more mills going into operation this month, and present indications are that by the end of the year capacity operations will be attained. Relief that newsprint prices, now $80 a ton on contract, will go lower next year, is not warranted, say I.P. officials. Even with wages reduced this year on an average of 17 per cent, the I.P. is said to be paying double the scale in effect in 1915, while coal, fuel, oil, and other supplies entering into the manufacture of paper are up on an average of 50 per cent. Moreover, it is pointed out, newsprint mills are now making paper of wood bought a year or two ago at high prices. With many of the large paper companies out of the market, pulpwood has slumped for a time, but it is held that it is bound to go up next year, in view of the curtailment of cutting. It is maintained that no great supplies of wood which would permit lower paper prices are available at the present price of around $17 a cord.

Newsprint consumption in the United States is estimated now to be on a par with that a year ago. For the year, consumption based on figures for the nine months to September 30 last will show a decline of only four per cent from that of 1920, a record eualed by few industries in this country.

There has been a softening of prices on plain box boards. Some mills are reported to have sufficient orders on file to absorb their entire production during the remainder of November, but others are looking for business, which, coupled with a slowing up of demand from box manufacturers, has made for an easier price tone. Plain chip board is selling in New York at $35 a ton f.o.b. this city, which means mills situated adjacent to this city are not realizing much more than $31 to $32 per ton on chip board. News board is quoted at $37.50 f.o.b. new York. On the other hand, folding box boards and boards for corrugating are in good demand and firm in price, with quotations of mills showing an advancing tendency.

GROUND WOOD:—Higher prices have been paid for ground wood this week. Sales of imported spruce ground wood on the spot in New York have been made at $34 a ton, ex the dock, and importers are reported holding for at least this figure on additional lots of spot pulp. Quotations from primary sources in Europe on ground wood for shipment range around $37 to $38, indicating that prices on the other side of the Atlantic have sharply risen, thus making sellers here strong in their attitude regarding prices. Domestic ground wood continues to sell at an average of between $30 and $32 per ton f.o.b. grinding plants, with a fairly steady business noted. Reports generally aver that there are few large lots of ground wood held in stock, and the technical position of the market is unmistakably firm.

CHEMICAL PULP:—Chemical wood pulp holds steady in price and there is a moderate business current. Paper manufacturers are buying cautiously, mostly limiting orders to supplies directly required, but producers and importers are obtaining enough business to make them firm respecting quotations. Bleached sulphite shows an advancing trend, and is likely to rise steadily until December 1, when the new contract basis of 5.25 cents becomes effective. Around 4.25 to 4.50 cents at pulp mills is the range of prices on No. 1 bleached at present. Easy bleaching also is on the rise, with sellers as a rule asking 3.50 cents or higher. Kraft pulp is meeting a good demand and is holding well in price at 2.75 to 3 cents a pound at pulp mills on No. 1 domestic kraft, and between 2.65 and 2.90 cents on Scandinavian kraft, with some sales of extra fine quality foreign kraft reported up to 3 cents.

RAGS:—Papermaking rags are in less demand than in sometime, and prices are moving lower on many grades. Roofing stock is especially easy, and sales of No. 2 satinets to felt paper mills have been reported this week at 95 cents per hundred pounds, f.o.b. New York, whereas these same rags only a few days ago freely brought 1.25 cents. Foreign dark cottons for roofing mill purposes have sold at 1.10 cents, ex the dock New York. Old white rags are available at slight reductions in price, and dealers are beginning to ease up in their demands for high prices on new cuttings. No. 1 white shirt cuttings are reported offered to mills at 10.50 cents a pound New York and less, and buyers are succeeding in obtaining concessions on most other kinds of new rags. Old thirds and blues are quoted in New York at from 1.75 to 2 cents a pound on repacked stock, and at around 1.40 cents on miscellaneous packing.

PAPER STOCK:—Prices on paper stock have changed so often and in such measure this week that the best way to outline the situation is by giving a list of grades with ruling quotations. Dealers in New York are at present offering supplies to paper and board mills at approximately these figures: No. 1 hard white shavings, 3.50 cents per pound, f.o.b. this city; No. 1 soft white shavings, 2.90 to 3 cents; old No. 1 kraft paper, 1.90 cents; white news cuttings, 1.70 cents; old flat books and magazines, 1.25 cents; folded newspapers, 60 cents a hundred pounds; No. 1 mixed papers, 40 cents; ledgers and writings, 1.70 cents, and No. 1 old manilas, 95 cents. All of these prices denote declines. Flat stock especially has been weak, and mills in the Middle West are reported bidding only around a cent per pound New York for heavy books and magazines. Newspapers and mixed papers also have dropped off considerably in value.

OLD ROPE AND BAGGING:—Old manila rope is at least one grade of paper-making material which is holding steady in price. Dealers report sales to mills at close to 5 cents a pound at shipping points, with some few cases cited where 5 cents has actually been received. Old bagging is in dull demand at easy prices.

DIAMOND STATE FIBRE COMPANY OF CANADA, LIMITED, CELEBRATE SECOND BIRTHDAY.

Two years ago on November 7, 1919, the Diamond State Fibre Company of Canada, Limited, started business in Canada at 455 West King Street, Toronto. The rapid growth of the business from its inception soon necessitated moving and more commodious quarters were located at 235 Carlaw Avenue.

Here, with thoroughly up-to-date manufacturing, office and shipping facilities they are in a position to execute and deliver all orders efficiently and promptly.

In the showrooms there is a wonderfully comprehensive collection of Diamond Fibre products which demonstrate to prospective buyers the many purposes for which Fibre can be used.

There is no doubt that fibre, both as raw material and in the shape of manufactured products is becoming more and more popular in the electrical, automotive, textile, railway and industrial manufacturing field and it is gratifying to find a young Canadian Company taking so prominent a part in supplying this ever-increasing demand.

About the only advantage in losing an arm is that you can't smash your thumb when driving a nail.

SUMMARY OF THE TRADE OF CANADA FOR SEPTEMBER, 1921.

The summary of the trade of Canada for September of this year shows that, as represented in dollars, imports for consumption were valued at $59,721,602, as against $115,121,588 in September, 1920, and $85,506,012 in September, 1919. The imports from the United Kingdom were cut by more than half as compared with the corresponding month last year ($9,135,316 as against $19,646,468), and those from the United States by nearly one-half ($41,402,646 as against $81,166,429). The exports of Canadian produce for the month were valued at $58,263,182, as against $94,389,685 in 1920. The exports to the United Kingdom show an increase as compared with the corresponding period last year: $27,426,967 as against $26,267,849; those to the United States show a great falling off, $21,757,855 as against $48,176,049 in September, 1920. Imports for the twelve months ending September, 1921, were valued at $905,878,556, as against $1,325,779,894 in the twelve months ending September, 1920, and exports at $976,060,660 as against $1,208,919,175. The month's returns show an unfavorable balance of trade of $1,458,420, but for the twelve months ending September the balance of trade is favorable by $70,182,604.—Weekly Bulletin.

THE USE OF WATERPROOF FIBRE IN CONNECTION WITH PUMP VALVES.

In Oil Refineries, Oil Well Plants, Pulp and Paper Mills and other large industrial concerns, where Pump Valves are extensively used, the old style Pump Valve Discs are gradually being discarded in favor of those manufactured from Condensite Celoron. Being a vulcanized fabric material, water and oil proof, of a dense mechanical structure, tough, fibrous and non-absorbing, it is far superior to any other material for this particular purpose. The discs are generally about four inches in diameter, with lathe turned edge, ½-inch or ⅝-inch thick, with a drilled hole 25-32-inches or thereabouts. This is just one more instance where Diamond Fibre is ousting precedent and taking its logical place in the manufacturing field.

FOOLS AND FOREST FIRES.

Tommy and Tony were two pretty pets;
They went to the woods and they smoked cigarettes.
They tossed matches here, and they tossed the stubs there.
Till suddenly wicked flames filled all the air.
These flames burned the forest; they burned up the crops;
They burned up the homes and the factories and shops.
They burned up the church, both the nave and the steeple;
They burned up the village, and alas! many people.
Now when you go into the forest shades, cool,
Don't, as Tommy or Tony, act like a fool.
Don't be careless with fire, don't toss cigarettes,
Then the forest won't burn and you'll have no regrets.
As for Tommy and Tony, they'd escaped once before,
And carelessly thought they could do it some more;
But found, to their sorrow, public feeling had risen,
So, now they are spending six months in a prison.

JAMES LAWLER.

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SAVE OUR FORESTS.

If you feel that we have interested you in paper-making, now one of our great national industries, will you do something for Canada when you get back home? Remember that perhaps the greatest asset this country possesses in its international trade is having its life seriously jeopardized by something which foresight and better organization will prevent. We refer to the disastrous effects on our national timber wealth of forest fire and timber bug. Every year these two national dangers destroy sufficient good timber to keep ten mills such as the one you have seen to-day in operation for a full year. The awakening of public interest in this grave danger is a vital necessity and we ask you to use your influence in whatever way you can to have the present condition of affairs remedied. Each province is responsible for the preservation of its own timber wealth.—From the program of the visit of the Ontario Educational Association at Iroquois Falls, August 20.

AN IDEAL SCHOOL LUNCH.

Too much emphasis has also been placed upon the fact that the child's school lunch should be hot.

There is no necessity, from a physiological or nutritive point of view, to take into the stomach any food that is warmen than the stomach itself.

The principal points are that the food should be nutritious and simple, and that it should be eaten slowly and well masticated.

The ideal school lunch is a sandwich made of graham bread spread with good pure fresh butter, and eaten with a cup of milk. Nothing better in the way of a luncheon can be supplied.

If instead of butter a little cold roast beef, lamb, or mutton is substituted, the child has all the meat he needs during the day.

If I were left to prescribe a school luncheon, it would be a whole wheat sandwich buttered, a cup of milk, and an apple. I would not bother about the temperature, except that the milk should not be ice cold.—Dr. H. W. Wiley in "The League for Longer Life."

PAPER SHIPMENTS INCREASE.

Shipments of newsprint for the United States and Canada exceeded production by 8,521 tons. Shipments were 16 per cent. more than in September, and production 9 per cent more. Surplus stocks are equal to about four days' maximum production.

Wisdom is ofttimes nearer when we stoop than when we soar.

PURE GRIT.

In the Street of Life, walking in the darkness of the shadow, hungry old Satan was out hunting with his dogs, the little imps of human weakness.

A man came walking through Life's street.

Satan said to the little devil with a bitter face, "Go get him for me."

Quickly the imp crossed the street; silently and lightly hopped to the man's shoulder. Close in his ear he whispered:

"You are discouraged."

"No," said the man, "I am not discouraged."

"You are discouraged."

The man replied this time, "I do not think I am."

Louder and more decidedly the little imp said again: "I tell you, you are discouraged."

The man dropped his head and replied, "Well, I suppose I am."

The imp hopped back to Satan, and said proudly, "I got him; he is discouraged."

Another man passed. Again old Satan said: "Get him for me."

The proud little demon of discouragement repeated his tactics.

The first time that he said, "You are discouraged," the man replied emphatically, "No!"

The second time, the man replied, "I tell you I am not discouraged."

The third time he said: "I am not discouraged. You lie!"

The man walked down the street, his head up, going toward the light.

The imp of discouragement returned to his master, crestfallen.

"I couldn't get him. Three times I told him he was discouraged. The third time he called me a liar, and that discouraged me."—From Editorial in former Chicago Examiner.

It sometimes takes courage to insist that you are right, but a lot more to admit that you are wrong.

Our influence depends, not so much upon what we know, or even upon what we do, as upon what we are.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

POLLING NEXT TUESDAY.

By the Associate Editor.

Next Tuesday, the electorate of Canada at the polls will choose Canada's new House of Commons. The electoral campaign has been a protracted one. And whether this, in itself, is to be regarded as a good or an ill, it has, at all events, allowed ample time for the public discussion of all matters, whether mainly relevant, or mainly irrelevant, which can, in any sense, be regarded as issues in the contest.

Two circumstances have combined to render the campaign, which is now so near its end, one of exceptional interest and complexity, in the matter of its conduct, and of exceptional uncertainty in its outcome from the standpoint of the political prophets.

For one thing, for the first time in the history of Canada, the women of the whole Dominion will be entitled, next Tuesday, to exercise the franchise. There has been no tendency in the direction of the organization of any "Women's Party" as a distinct and separate political element among the electorate. And (in our view, at any rate) any such tendency would have been, on almost every ground, a matter for apprehension rather than for gratification. But yet the enfranchisement of a new, and a very numerous, class, such as the women of Canada constitute, and a class, moreover, which, in many respects, unquestionably possesses a certain solidarity of interest, means, and must necessarily mean, a novel contribution to the political institutions of the country. We believe that it will mean a contribution which will prove a source of substantial strength to the service of the State. Henceforward, the direct influence of the woman of Canada or our public and political life will be huge, and, in the main, we are sure that it will be wholesome.

For another thing — and also for the first time in the history of Canada — three parties, each with a platform, an organization, and an accredited leader of its own, are contestants for place and power. It is this fact which tempts the political prophet to despair. The Liberals expect to draw their main strength from Quebec and the Maritime Provinces. With equal certainty, and with no less reason, the Progressives look to make almost a clean sweep in Manitoba, Saskatchewan and Alberta. The Government expects to make nearly a clean-up in British Columbia, but pins its hopes mainly to Ontario. It is in the last-named Province—the Province which sends to the Dominion House of Commons pretty well three-sevenths of its total membership—that the forthcoming election will be decided.

We are not anxious to enter the ranks of the political prophets. But the concensus of opinion, among those who should be best qualified for that honorable company, seems to be that no one party is likely to secure a clear majority over the other two parties, but that, in the unlikely event of that happening — and, after all, in politics it is always only uncertainty that is certain—the Liberal party must be considered the only one which could, even conceivably, do so. Supposing that no one party could secure a bare majority over the other two, then it seems probable that either a coalition, or a more or less formal alliance between two parties, or between one party and a section of another party, would result.

There are those who predict that either a coalition, or an alliance, between the Liberals and the Progressives will be the inevitable result of the election. On the whole, that is what appears most likely to come about. A coalition would mean that the two parties would share the "sweets" — and the responsibilities — of office. An alliance, on the other hand, would mean that only one of the two would take office, but that it would depend for its continuance therein on the support of the other in Parliament, and would, as a consequence, have to shape its political course in the light of such conditions.

On the other hand, those are to be found who aver that Mr. Meighen and his colleagues will remain in office after the election (however it may result) and will form either a coalition, or an alliance, requisite to ensure them a Parliamentary majority with that section of the Liberal party which approximates the more nearly to their tariff views. In this connection, it should be pointed out that, however, badly the election may go against him, Mr. Meighen, after it as before it, will still be Premier of Canada, and he cannot be constitutionally compelled to tender his resignation of that office to the Governor General, until he and his Government are displaced by an adverse vote in Parliament itself. If, in a hopeless minority, after the appeal to the country, and if no prospect of a coalition or working Parliamentary alliance offers, he would, however, most likely resign without waiting for such an adverse vote in Parliament. But the fact that he will still be in office after the election undoubtedly gives him, on the morrow of the election a certain tactical advantage which may, or may not, be turned to practical account.

So far as the tariff, which is the principal issue in the election to be held next Tuesday is concerned, we take it that, speaking generally, the view of those concerned in the pulp and paper industry is that the present tariff, so far as it affects products of the kind that they themselves manufacture, is not far wrong. They do not want to see the barriers lowered. And not unnaturally. The

Canadian pulp and paper industry, located in a country so vast in extent, and, comparatively speaking, so sparsely populated, is at a disadvantage in competition with that industry in the United States, with its huge domestic market which, by its immense volume of trade, and its greater variety of conditions, renders the process of production less expensive than it is here. The tariff which the Canadian pulp and paper industry needs is a tariff of such a nature as, in effect, to rectify this condition, and to enable Canadian mills to secure all the Canadian business they are prepared to handle. That is just about what the present tariff does, and hence, the average pulp and paper manufacturer is extremely disinclined to see it made the subject of downward revision.

Assuming, for a moment, that reciprocity, in the matter of the products of pulp and paper mills, were to come into force tomorrow, what would be the effect? It would result, in the judgment of men who may be regarded as leaders in the industry, to whom we have put this question, in making the pulp and paper industry in this country but an adjunct to that industry in the United States. "What we need to do in Canada," said one of them, "is to speed up production, and the present tariff has aided that. The utmost competition within Canada is good for the industry. Each branch of it must be loyal to the other branches. As far as United States' manufacturers are concerned, if they want a share in our market, let them come and erect plants here, and share in it — as many of them have done — and they will be welcome. But we don't want the handicapping competition which is what reciprocity would mean in our present situation. In ten years' time, things may be different — we shall have a large and well-distributed population. But, for the present, the pulp and paper industry needs that measure of protection which the present tariff gives it."

Another phase of the probable effect of reciprocity in pulp and paper would be that Canadians would be shipping their wood to the United States and buying it back again in the form of paper. They would thus be paying "through the nose"—paying for the extra freight as well as for the paper, made from Canadian material by American labor.

The present tariff, it seems to be the general view in the industry, is one based on actual trade necessities and actual trade conditions. "We want no monkeying with the tariff", said one paper manufacturer, of great experience and judgment, to us, the other day. That terse summing-up of the situation undoubtedly expressed the view of the majority of pulp and paper men on the burning question of the hour.

COBWEBS.

Political capital is being made of the practice, now said to be largely discontinued, of stamping Canadian made shoes with American names. Incidentally, it is disclosed that Canadian shoes are often shipped in American made fibre containers. One user is reported as saying his object is to force down the price of the Canadian product. What would he say to the general purchase of goods from his own American competitors for the purpose of breaking the price of his article? If "Buy Canadian Goods" means anything, it means cooperating in doing so.

Was the U. S. Pulpwood Commission abandoned because President Harding considers the situation satisfactory or the idea hopeless?

The Editor enjoyed being present at the presentation by their friends and fellow-workers at the Garden City Press, of a chest of silver to Mr. Armstrong, superintendent of St. Anne de Bellevue plant of the Industrial and Educational Publishing Co., and Mrs. Armstrong on the occasion of their 25th wedding anniversary.

Solomon said, "He that walketh with wise men shall be wise." You can have the company of many of the best authorities in the industry, and have their knowledge at your elbow, by ordering the textbooks on the Manufacture of Pulp and Paper. Write for particulars.

Headline in Montreal paper: "Dead man had permit to carry revolver." That's the right idea; if only dead men are permitted to carry arms, there will be fewer murders.

SCENERY, IN SPOTS.—A REVERIE.

H. TUESS.

Birch and poplar,
Birch and poplar,
Growing like the deuce,
Why the dickens can't we see
Some little sprigs of spruce.

Stump and charling,
Stump and charling,
Scattered round profuse,
This is what became of them,
Those little sprigs of spruce.

PORTUGUESE APPRECIATION OF TREES.

In many places where timber trees are to be found in Portugal, one sees the following inscription:

"Ye who pass by and would raise your hand against me, harken ere you harm me."

"I am the heat of your hearth on the cold winter nights, the friendly shade screening you from the summer sun, and my fruits are refreshing draughts quenching your thirst as you journey on.

"I am the beam that holds your house, the board of your table, the bed on which you lie, and the timber that builds your boat.

"I am the handle of your hoe, the door of your homestead, the wood of your cradle, and the shell of your coffin.

"I am the bread of kindness and the flower of beauty.

"Ye who pass by, listen to my prayer; harm me not."

Lumber and the Banks

By W. P. RAPLEY, Sherbrooke.
(From "Caduceus," the staff magazine of the
Canadian Bank of Commerce.)

In view of the close business connection between the banks and the pulp and paper industry, Mr. Rapley's article will be helpful in presenting the banker's point of view with regard to financing lumbering operations. For the most part, the article might have been written of pulp wood operations, with a rossing plant for a saw-mill.—Ed.

The embryo banker has a wonderful source of information at his disposal, which may or may not be appreciated; he has the opportunity to obtain a fundamental knowledge of the various industries conducted by customers of the branch at which he is stationed. If the desire exists, and it should be cultivated if it does not, he has only to take advantage of his environment to acquire an education which will never be regretted and which will be an important factor in preparing him for the responsibility of a managerial appointment. There is one industry producing a commodity second in importance only to wheat, the details of which are known to comparatively few of the branches —and that is lumbering. With the lure of the woods and rivers strong with us, there cannot be many who are not familiar with the romance of lumber from log to mill, but this article is written in the belief that there are unusual and interesting features in connection with its financing of which many of the staff are not aware.

Credit is granted for lumbering on a more generous scale than is the case with any other industry; the proportion between liquid assets and floating liabilities seems at certain seasons to violate every rule of safe banking, but the vital importance of the product guarantees a market, and the security from the standpoint of reasonable liquidation may be regarded as imperishable except from fire. In every lumbering centre the inhabitants will point out to the newly-arrived banker the residence of local millionaires who, having begun with nothing, have become wealthy through lumber or pulpwood. This at first gives him the impression that the forest offers the surest and easiest road to fortune. He soon learns, however, that many have ventured without success, and when he considers the attributes of energy, ability and courage that a lumberman must possess to begin with the proverbial "shoestring" and year after year place his entire capital at the mercy of the elements, he is forced to the conclusion that the reward is well deserved.

Securing the Account

In order to consider comprehensively some of the salient features peculiar to the industry, let us assume that, as bank manager, it is our duty and privilege to watch the account of a lumberman, who after operating successfully for a certain number of years has acquired a handsome surplus of say $150,000, but has cut over his limits and is compelled to seek a fresh field. He disposes of his cut-over lands, mill, stock, etc., and purchases a substantial limit, intending to operate on a more extensive scale. To secure a property of any magnitude probably means moving to the outskirts of civilization, as each year results in the exhaustion of the forests in the more settled districts. The account may previously have been carried with a bank not represented at the town where we are stationed, and upon learning of the sale of the limits in question and after instituting enquiries and assuring ourselves of the purchaser's standing, we formulate our plans to secure the connection.

If our efforts meet with success the account is opened in the spring. We are informed that a mill will be erected and roads built with a view to commencing operations in the fall. No advances will be required until cutting commences, but we arrange for a statement to be submitted on 31st August in order that a line of credit may be established in plenty of time.

His First Statement

On the date mentioned our new customer calls at the office and presents us with the following figures:

Statement as at 31st August.

Cash in Bank	$17,000
Accounts Receivable	18,000
	$35,000
Limits	80,000
Roads, camps, etc.	3,000
Interest in Booming Co.	3,000
Horses, sleighs, etc.	7,000
Camp and mill supplies	3,500
Mill and machinery	40,000
Railway sidings	1,500
Residence	5,000
	$178,000
Accounts payable	$3,000
	$3,000
Due on limits, payable $5,000 per annum, first payment due July of following year.	25,000
Surplus	150,000
	$178,000

He states that he wishes to get out about 5,000,000 feet of logs and requests a credit of $100,000 to be secured in the usual manner by assignments under Section 88 of the Bank Act.

We have now had sufficient time to become well acquainted with our customer, have seen the mill erected, and after studying the assets, arrived at the conclusion that we are prepared to recommend the account. However, our superintendent remains to be convinced, and we must consider the information to be embodied in our communication in order that the application may be viewed in a comprehensive manner. Let us ask ourselves the following questions.

The Banker's Knowledge

What do we know of our customer's ability, reputation, etc.?

We have found by means of mercantile and bankers' reports that he was well and favourably known at his former place of residence, and has had many years of experience as a lumberman. He had cut over his lands and was able to sell his mill and real estate and was therefore possessed of sufficient ready money to develop his new property. His eldest son has assisted him for five years and has been trained in every branch of the business. This is an important feature as providing against mismanagement in case of the father's demise or long illness.

What do we know of the limits?

While we have not had them cruised, we know from reports that they are looked upon by lumbermen as equal to any in the district and were carefully inspected by our customer before the purchase was consummated. They are reported to contain an abundance of spruce, which can be lumbered at a minimum of expense. The property lies along the banks of an easily driven river, and is intersected by small streams and brooks, which ensures a short haul. While the limits are not freehold, the land is not suited to agriculture and no difficulty will be experienced in obtaining renewals of the licenses in due course. When the large timber is cut, the property should have value as a pulpwood investment.

Technical Information

What is the nature of the drive?

The limits are about twenty-five miles up stream from the mill, and there are only two other concerns driving the river. These three have joined in forming a booming company for the purpose of making what is known as a "corporation drive." That is, the company has constructed the necessary piers and booms and will handle the three drives which will come down simultaneously in the spring, and the logs will be sorted and boomed and the expense divided pro rata. The river empties into a small lake on which the mills are located, and there is absolutely no danger of loss if the booms should be carried away by a freshet.

What is the equipment of the mill?

The mill is complete and well constructed, considering the cost, and at a conservative estimate the limits provide for a life of fifteen years. Its capacity can be increased by a small outlay should additional limits be purchased or more extensive operations be carried on. The burner is not of steel construction, but is what is known as an "open burner." For this reason the insurance rate will be considerably higher, but the additional cost of a steel burner would have been prohibitive at this juncture. A high-pressure pump has been installed to provide protection against fire. Adequate insurance is carried on the mill and every care will be taken to avoid fire, as the loss of the mill in the sawing season would likely result in a "lock up" until a new mill could be erected. There will be no expense for fuel as the sawdust is available for this purpose.

What are the railway facilities?

The town is situated on a transcontinental railway, and our customer will not be at a disadvantage with competitors as regards freight rates. The yards are served by a siding, and loading can be carried on expeditiously.

What labor is available?

Plenty of local labor is available, and our customer has brought a number of his foremen with him. They have been in his employ for years, and their loyalty is an indication that there is little likelihood of his having labor troubles.

The Balance Sheet

The items composing the balance sheet are for the most part self-explanatory. We might mention that the accounts receivable appear to be first-class, and should all be paid during the next three or four months. We shall not show them in our declarations, as they represent the former business, and do not in reality pertain to our security by way of Section 88. We should, however, be justified in doing so, as we have obtained a general assignment of accounts. The timber licenses have been registered in our customer's name, and he has assigned them to the vendors to secure the unpaid portion of the purchase price. The agreement permits him to complete the transaction at any time, but he cannot be called upon to pay more than $5,000 per annum, provided the cut does not exceed 6,000,000 feet.

While there is apparently a lack of liquid assets for a credit of $100,000, we must remember that with that amount he should eventually convert 5,000,000 feet of logs into at least 5,750,000 feet of lumber, allowing for a modest overrun of 150 feet per thousand. Estimating that this lumber should realize say $34 per thousand, or $195,500, we feel satisfied that after allowing for all reasonable shrinkages, the bank will be provided with ample security. However, it is likely to be over a year from the time the cutting commences until the sawing is completed, and in the meantime operations will have commenced for the next season. As a result we shall never be able to show a liquid surplus to confirm the figures we have used, and as the reason may not be clear to any one not familiar with the industry, we shall endeavor to explain as we go on why a lumber account generally appears to be receiving unusually generous treatment from its banker.

Granting The Credit

After complying with the usual formalities, the credit is granted, embodying the stipulation "relative insurance in favor of the bank." This clause is of great importance, and we must be alert to see that it is observed. There can be no loss by fire until the logs are hauled from the water and sawn into lumber, but we must see that sufficient insurance is placed and lodged with us at frequent intervals as the manufactured stock accumulates. Many lumbermen cancel the insurance on their manufactured stock as soon as snow falls and do not replace it until spring, as there is not considered to be any risk during the winter. This is a matter which must be carefully considered according to the circumstances and conditions surrounding the account.

Our customer will be anxious to commence cutting as early as possible, as with deep snow he will not be able to cut as close to the ground, and valuable timber will be left on the stump, but the date will depend upon the labor situation. If he employs farmers from the surrounding country, they will not be able to leave their farms until the harvest is gathered. Under present conditions large operators in the Province of Quebec prefer to have the cutting done by contractors or jobbers as they are called, who undertake the work at so much per thousand feet to be paid at intervals as the work progresses. These jobbers will fell the trees and yard the logs but the hauling to the banks of the rivers in most cases will be undertaken by the operator. There are several reasons for employing jobbers who are generally farmers well known as to their ability and integrity, but the chief advantage is the fact that there is less likelihood of labor trouble. A jobber may have a small contract necessitating the assistance of three or four men, or it may be larger. He will naturally engage his own relatives or friends, and it has been found that he obtains much better results than when gangs of men are supervised by foremen. Which course is pursued depends to a great extent upon the location of the limits and their distance from civilization. If there are no settlements close by it will be difficult to secure a sufficient number of capable jobbers.

Customer's Declaration

To return to the hypothetical account in question, we must obtain declarations in connection with our security, and our customer should be asked to compile these figures once a month. We will say that on 31st December we receive a declaration as follows:—

Advance to jobbers, $20,000.
Bank loan, $5,000.

Not much information, and one not familiar with conditions would naturally ask for more particulars. However, it would be impossible to record exactly how many feet of logs the jobbers have cut and the security shown represents the amount paid out to them together with other expenses incidental to the work. So far the bulk of the money required has been furnished by the customer.

On 31st January the estimate stands at:—
Advances to jobbers, $35,000.
Bank Loan, $20,000.

Cutting is now in full swing and the logs are being hauled to the rivers.

Declaration 28th February:—
Advance to jobbers, $55,000.
Bank Loan, $40,000.

Our customer is still using moneys received from accounts receivable, but this is not apparent, as there are certain overhead expenses which are not yet reflected in our security.

Second Declaration

By 31st March, when the next declaration is received, the hauling has been completed and the logs are on the banks or in the streams ready for the drive. The jobbers have been paid in full, and the scale shows the total cut, and the declaration received for the first time shows something tangible:—

5,075,000 feet logs at $15, $76,125.
Bank Loan, $60,000.

The winter has been favourable, and no logs have been left in the woods; the scale is gratifying inasmuch as it shows that our customer has to all intents and purposes kept within his estimate which confirms our confidence and furthermore indicates that his credit should prove ample.

With a normal spring providing plenty of water, no difficulty should be experienced in the drive, and we will say that on 30th April the logs are boomed and the mill put in operation. The declaration reads:—

Logs in streams, 275,000 feet at $15	$ 4,125
Logs in booms, 4,800,000 feet at $18	86,400
	$90,525
Bank Loan	$75,000

It is evident that 275,000 feet of logs were "hung up" in the drive. These logs should come down next spring, and as they bear our customer's special mark they constitute good security. There will, of course, be some shrinkage, but we shall not take it into consideration, as we know the figures and valuations to be sufficiently conservative to allow for this contingency.

Third Declaration

We will assume that on 31st May, after the mill has been running a month, the following declaration is received:—

Logs in stream, 275,000 at $15	$ 4,125
Logs in booms, 4,175,000 at $18	75,150
Lumber, 800,000 feet at $30[‡]	24,000
Overrun of 15 p.c. allowed for	
	$103,275
Bank Loan	$ 80,000
Fire Insurance	16,000

Our margin of security should continue to improve steadily from now on. In the early stages we may have experienced some misgiving that there might be a hitch, but our security is now in a condition where we can verify it from a personal inspection.

The mill functions properly and the sawing is carried on, and during the summer we visit the mill frequently. Our observations show that the book-keeping provides for a complete record of each day's sawing, loss of time through accidents, etc. The lumber is carefully sorted and piled and the stipulation of the insurance companies strictly carried out.

Year's Operations

On 31st August our customer advises that his entire output has been contracted for by responsible firms at an average of $34 per thousand run of the mill. His statement is now a year old, but he advises that he would prefer not to tender an audited statement until 31st December, when the yards should be clear of lumber and the results of the year can be comprehensively reviewed.

He submits a declaration and estimate of profit, and requests that a fresh credit should be granted to finance a similar cut for the coming season. The proceeds of sales will meanwhile take care of operations and permit him to keep within the present and anticipated credit. The profit is estimated at $25,000, and we might reasonably ask why the application could not be reduced to this extent, but it is important to remember that we have assumed for convenience that no logs or lumber were held over and that the circumstances were propitious throughout. If our customer had not been starting a new venture, it is doubtful if he could have got out 5,000,000 feet with loans of $100,000, as he would likely carry over a portion of his stock to meet with some slight reverse, and he will do well to keep within this figure next year, allowing for the $25,000 additional capital provided from profits.

Declaration 31st August:—

Logs in streams, 275,000 feet at $15	$ 4,125
Logs in booms, 1,500,000 feet at $18	27,000
Lumber, 22,800,000 feet at $30	84,000
Accounts receivable for lumber sold at $34..	33,400
	$148,525
Bank Loan	$100,000
Insurance	80,000

It would appear that on 31st December with the entire stock sold at $34, the account should show a much larger margin of liquid assets, but we must remember that there will be advances to jobbers, with the result that the ratio may not reach more than 1.50 to 1. This we regard as highly satisfactory for an account of this nature, and to confirm our views we would mention that the Federal Reserve Banks in the United States, while demanding assets of 2 to 1 when offered paper for re-discount, make an exception in favor of the lumberman and are satisfied with a margin of 1.50 to 1.

[‡] The valuation of $30 per thousand is somewhat in excess of actual cost, but considerably below probable selling price. This portion of the security is now in a merchantable form, and the declaration which is compiled in accordance with the usual practice meets with our approval.

Space will not permit us to go into details regarding the estimated net profit of $25,000. Suffice it to say that we believe it to be conservative. According to the original estimate which has proved approximately correct, there should be a profit of say $45,000 which would leave $20,000 to take care of depreciations, interest, taxes, etc.

Some Things to Watch

Now while our experience has been most satisfactory, our observations of the past year have given us a pretty good idea as to what pitfalls exist and what contingencies may arise, and we will record them herewith.

1. Owing to the distance to the limits, it is impossible actually to check the operations and the moral security must be first-class.

2. The success or failure depends on the customer's ability, and once the bank has made advances it must carry the operation through as the security cannot be realized until manufactured into lumber. For instance, if a credit were granted to cut 5,000,000 feet and the customer, either through poor judgment or by taking advantage of his position, cut 7,000,000 feet, the bank would in self protection be obliged to increase the loans in order to make the security marketable.

3. It is impossible to avoid seasons overlapping. That is, the loan will not be liquidated before it will be necessary to make advances for the next season. For this reason it would be advisable to review the account at the end of the summer with a view to ascertaining the customer's plans. If contracts have not been made for the manufactured lumber and the demand should fall off, the bank might unwillingly find itself committed to finance another cut, which would necessitate much higher advances than it would have cared to entertain.

4. No matter how able the operator may be, he is at the mercy of the elements. There may be too much or too little snow. The spring may be open before his hauling is completed, or there may not be sufficient water to float his logs to the main river, and the mill may be so located that there is danger of a sudden freshet carrying away the booms with a total or partial loss.

5. The life of the mill depends upon the life of the limit. Its valuation should be written down, or a reserve set aside each year, if fresh limits are purchased.

There is a great deal to learn in connection with lumbering. Those who are fond of outdoor life can combine business with pleasure, shoot over the limits in the fall and fish the streams in the spring, and thereby familiarize themselves with the property and the various stages of operation.

Note:—The figures used in thhe foregoing are, of course, not based on actual facts, and could not be used for the purpose of comparison. It would be difficult to arrive at an estimate that could be regarded as correctly proportioned, as costs and selling prices vary according to the physical aspects of the property and its distance from the market, either for domestic use or export. In order, however, to give some idea of the probable cost of lumber, we have compiled the following:—

Estimated Cost of Lumber Per Thousand Feet

Cost of lumber in the log		$12.00
Cost of stumpage and Government fee	$5.50	
Cutting and yarding	6.50	
Hauling and driving		$ 6.00
Hauling	$3.00	
Driving	3.00	
Cost of sawing		4.00
Cost of piling, handling, etc.		1.50
Overhead and incidental expenses		2.50
		$26.00

FARMERS WILL NOT CUT WOOD FOR NOTHING.

If present information is reliable, very little pulpwood will be cut this season in the Province of Quebec either by the pulp and paper companies or by the farmers. Neither will there be any great quantity of rail wood moved. The reason for this condition is not far to seek. Canadian and American mills have, with few exceptions, very heavy stocks on hand—so heavy that the requirements for the next year are more than filled. This is not counting all the enormous stocks which have been bought, at high prices, and which the companies are not anxious to move, particularly at the high freight rates—not now so high for distances up to 128 miles, but sufficiently high to discourage movement just now.

The Canadian Pulp and Paper Association made very urgent representations to the railway companies with a view of securing reductions on pulpwood. Something has been accomplished, but not a great deal. In July rates in Eastern Canada for distances over 125 miles were reduced, and the new order of the Railway Commissioners reduces the rate for shorter distances one half cent per 100 pounds, about 20 cents per cord.

As has happened before, the present low price will probably result in reducing supplies of pulpwood, with a consequent large diminution in the available wood next fall. We may then witness a substantial recovery in values.

CANADIAN SECRETARY OF T.A.P.P.I

Mr. W. G. MacNaughton has been appointed Secsetary-Treasurer of the Technical Association of the (U.S.) Pulp and Paper Industry, as successor to Mr. T. J. Keenan, who resigned recently to resume the editorship of "Paper."

Mr. MacNaughton was born in Canada (he didn't say when) and graduated from McGill in Chemistry in 1904. He was with the Canada Rubber Co. two years and then, until 1917, was Chemical Engineer and Manager of Manufacturing with the Nekoosa-Edwards Paper Co., at Fort Edwards, Wis. In 1917, Mr. MacNaughton went to Spokane, Wash., as General Manager of the Inland Empire Paper Co., and from 1919-1921 superintended the construction work done by the Spruce Falls Pulp and Paper Co., at Kapuskasing, Ont.

The new Secretary's practical experience will be a big asset to the T.A.P.P.I.

Need of Contact Between Cost and Technical Men

By FRED C. CLARK, Vice-President Technical Association of the Pulp and Paper Industry.

In these days of close analysis in connection with industrial operations there is developing a greater demand for means by which the daily operation of a plant or process may be measured to show either one or both of two things. The plant manager is continually asking for both reduction in cost and improvements in quality. In the final analysis the success or failure of a plant from an operating standpoint is entirely a question of continually reducing costs and improving quality, and strange as it may seem any plant that works out a method that enables it to operate more economically, resulting in lower costs, almost invariably discovers that by doing so it is possible to increase quality. This is so because the close study that is required in reducing costs brings to light additional knowledge and increase in quality.

To carry out these two fundamental ideas in plant operation, namely, lowering cost and increasing quality, there must be a correct method by which these results may be secured and this method may only be brought about by a thorough understanding of the function of the cost man and the technical man in their relationship to each other. In this discussion it is well to forget for the moment the effort that must be expended by the sales department and the final result as shown by the company balance sheet. The question of a satisfactory balance sheet may only result through proper co-ordination of all factors with the company.

The Point to be Emphasized.

The point that it is desired to emphasize is the relationship that must exist between the cost man and the technical man. Briefly, the first function of a cost man is to develop means by which the technical man may secure a graphical picture of the various elements entering into the operation of a plant. Without the yard stick built up by the cost man, it will be impossible for the technical man to make any real fundamental advance. The chief duties of the technical man are the development of new and improved processes and the study of the mechanics involved in plant operations.

Let us assume for the moment that both a new cost man and a new technical man are just entering the employment of a company which has paid little attention to either cost or technical work. The first thing for the cost man to do is to make a survey of the plant from the standpoint of devising means by which the various elements in the plant operations may be costed. If past records are available he will go back over these, at the same time building up a tentative cost system. The result of his observation enables him to show that certain operations have been done in the past for a certain amount per unit of productive or per operating hour. These figures then become a tentative yard stick in measuring future results.

First Thing for the Technical Man to Do.

When the technical man starts out he will first make a survey of the plant operations in order to determine the mechanical relationship between all individual parts. With this data carefully developed he will then go to the cost man for the purpose of applying the yard stick set up by the cost man. With this preliminary work completed it then becomes the duty of the cost man to determine whether the mechanical relationship of the various elements in the process are running above or below the tentative standards set up. The analytical cost man as a result of his study of plant operation will be able to point out continually to the technical man where the plant is falling down in efficiency. The cost man, therefore, becomes the plant barometer and enables the technical man to predict the results that will be accomplished by any modification in the process.

It is quite common practice for a plant manager or a technical man to consider that increase in production is the only point to be considered. An increase in production, however, is not justified if this increase in the rate of machine hour operation or the rate per unit of production. Therefore, it is necessary for the cost man to supply this information.

When the technical man tries out a new plan his only method of determining whether this plan is good or bad is as a result of the report by the Cost Department. In every case it is proven out that a suitably worked out cost system will enable the cost man to even foretell a drop in the efficiency of the plant operation. Many illustrations can be given to show that this advanced information can be used to check the decrease in plant efficiency and result in large savings to the company. The cost system may, therefore, become a continually operated automatic alarm system, to point out any decrease in plant efficiency.

One or two illustrations may be given to show the operation of such an alarm system.

Several Illustrations.

A mill that had been using a normal amount of bleaching powder very suddenly showed a tremendous increase in daily consumption. The cost department requested the technical department immediately to look into the case. An analysis of the bleach powder showed that it was well up to requirements in strength. A survey of plant operation, however, showed that there was a tiny crack in the hydrometer, used in measuring the bleach liquor, which resulted in giving fictitious readings. Had the cost department not been in a position to analyze the operation of this plant and had they not called this matter to the attention of the technical department it would have been easily possible for this mill to have lost $2,000 worth of bleach per month. Many similar cases in the handling of process supplies could be given as illustrations. Some of them showed that the plant because of poor measuring methods was reporting much less than their actual consumption and other cases have been noted in which the reported plant consumption was very much greater than the actual consumption. Results of this kind do not appear evident until they get into cost records and in this way become a barometer by which the efficiency of a plant may be determined.

New processes, new equipment and new methods all must be justified through the cost man, resulting either in reduced cost or a better product having a higher

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*Address given at the Drake Hotel, Chicago, October 6, 1921, at the Sixth Semi-Annual Convention of the Cost Association of the Paper Industry.

market value. Because of these facts the work of the technical man must ever remain incomplete without the closest co-operation with the cost man. What is true in plant operations is equally true in regard to the report of an engineer, namely, that the report in its final analysis must be measured in dollars and cents, or, in other words, measured by the yard stick of the cost man.

Cost Man in Scientific Work.

It may be interesting to state that the cost man is essential even in scientific work. Several large industrial research laboratories have installed very complete cost systems. Each problem presented is given a number to correspond with the job number in a machine shop, and to this job number is charged part of the overhead as well as the actual cost of labor and materials. Such cost figures result in two things. In the first place it becomes possible to determine what type of investigational work is really productive and in the second place it acts as a governor to prevent the "hit or miss" undertaking of a problem without due consideration for the costs involved and the results to be accomplished. If the problem to be undertaken is really worth while then it will justify its cost, and if it cannot justify this cost such work should not be undertaken.

Cost and Technical Men Co-operating.

It is a matter of a great deal of gratification to see the Cost Association and the Technical Association beginning to ask information of each other. This shows an extremely healthy state for the industry. The more closely these two organizations can work together the greater will be the benefit to the industry. A number of very interesting problems have already been undertaken, two of which will be of tremendous value. The one in regard to beater furnish may easily result in a very radical change in the whole paper-making process, while the second problem relating to depreciation will have two far-reaching results. The first will be the setting up of recognized standards in regard to machine and equipment depreciation, and the second, which is probably more important, will be to point out the fact that certain types of equipment or equipment used in certain manufacturing processes have a very much higher rate of depreciation than necessary. Such definite information will result in improvements in equipment because it will bring to light conditions that are now unknown, or only known in a very hazy indefinite way.

There never was a day in the history of the paper industry in which there was greater need for co-operation between the cost and the technical man. American paper exports are merely a memory because of foreign competition.

Paper products are being landed in this country at 25 to 50 per cent under our cost of manufacture. This condition is a fact and must be faced. It is, therefore, imperative that the cost man and the technical man work in such close cooperation that every single advantage may be secured for American industry.

RIORDON SALES RE-ORGANIZED.

A reorganization of the Riordon Sales Co. has been effected and style under which this concern will be known in the future will be the Riordon Sales Corporation. Mr. T. J. Stevenson becoming new president, Mr. George Challes and Mr. Russell McCandless vice-presidents, Mr. H. J. Webb treasurer, and Mr. F. G. Robinson manager.

LOCKWOOD'S DIRECTORY FOR 1922.

Lockwood's Directory needs no introduction to the paper, stationery, and allied trades, which it covers. The 47th annual edition is now being distributed and can be had for $7 in American funds, from the Lockwood Trade Journal Company, 10 East 39th Street, New York City.

It is hardly necessary for us to comment on this work as it has become the standard directory for North America. We can only say that we find ourselves obliged to order a second copy as we have so many friends connected with the industry who are continually borrowing ours from us.

The contents are as follows:

Pulp and Paper Mills.

All the Paper, Wood Pulp and Chemical Fibre Mills in the United States, Canada, Mexico, and South America, geographically arranged, with the names of officers; a complete statement of mill equipment; kind of power used, product of mills, and total production per 24 hours.

Mills Classified According To Products.

All the mills making the same kinds of paper, boards or pulp are brought together under headings descriptive of their products.

Makers Of Paper Specialties.

Giving the names of concerns that convert paper to special purposes. Where to find "Paper Specialties" is answered in this list.

Paper Dealers.

Wholesale paper houses with indicating marks telling whether the business is done through stores or from warehouse or mill direct; large concerns selling paper as a side line are also included.

Pulp, Rag and Paper Stock Dealers.

Names of houses dealing in rags, old papers, sulphite, sulphate, etc., including importers.

Converters of Paper.

Included under this heading are those concerns that turn out the following products: Glazed papers, Coated papers and boards, Waxed and Parchment papers, Toilet papers, Saturators of Roofing stock, paper bags, paper boxes, envelopes, pads and tablets, tags, wall papers, etc.; also a list of Twine manufacturers.

Stationers' and Office Appliances.

Leading Stationers and others handling Stationery and Office Appliances in the United States, Canada, Mexico, Cuba, Porto Rico and the Phillipine Islands. The list printed is considered the most complete and most accurate published.

Watermarks and Brands.

All the leading titles used in the American Paper Trade are included.

Who's Who in the Paper Industry.

This list includes all the prominent mill officials, together with their connections.

Trade Associations; Statistical Information and the Advertisements;

the latter comprising the most complete guide to the sources of supply of machinery and Raw Materials used in the industry.

McMASTER WITH POWELL RIVER.

A. E. McMaster, former superintendent of the commercial department, Grand Trunk and Pacific Railway, in Vancouver, and secretary of the Whalen Pulp and Paper Mills, has been appointed to the post of resident manager of the Powell River Pulp and Paper Company, Powell River, B. C.

Canadian Forestry Needs

(From American Forestry.)

By ELLWOOD WILSON.

The progress being made toward practical and rational management of the Government forests in Canada is most gratifying. It is however only in its embryonic stage and much work needs to be done. Of course, the first and most important thing is fire protection and this is receiving more and more attention. Five years ago a summer like the past would have caused enormous destruction, but in spite of the weather and the numerous fires the loss of valuable timber was not large. Much has been done during the past season by airplanes, not only in locating and reporting fires but also in carrying men to put them out. Aerial work will certainly increase in importance and value very rapidly in this country owing to the great extent of forests and the very meagre means of communication.

The second great need is for an inventory of our forest resources. We must know where the northern limit of merchantable timber is and also the eastern. Offerings of timber properties in Labrador are from time to time coming on the market and there seems to be no reliable information as to whether there is any timber there or not. Some reports say that there is enormous wealth and others that there is timber only on the rivers and surrounding lakes and that the hills are quite bare. Many people when they hear of the rapid depletion of our forests turn over in bed with the comforting thought that we shall only have to go a little farther north to get all we need and want. We must know the areas which have been burnt over and whether they are being naturally reforested or not. The areas already cut over must be mapped and the probabilities of a new crop ascertained. It seems fairly certain that one-third of the original forests of Canada have been burnt, that is, are not now covered with merchantable timber, or with timber that will be merchantable in a generation. Here again the airplane is doing yeoman service and it is only by its help that we can get the above information, in time to influence our legislators to the necessity of making log time plans for the proper use of the forests.

Knowing approximately the amount of timber which we have and the annual consumption we can at once bring the whole forestry problem from the realm of opinion and conjecture down to the basis of fact and business necessity. Knowing how many acres of merchantable timber we have, how much is cut-over, how much is burnt, and about how much is likely to be burnt each year, and knowing the annual consumption we can say that we will not reach the end of our supply for a century. In which case the lumbermen and the general lumber using public can do the worrying. If however, it appears that our supply will be exhausted in fifty years or less than the pulp and paper manufacturers and the newspapers will begin to get excited and there will not only be fireworks but constructive action. Fortunately since the majority of timber lands in Canada belong to the Provinces each one of these has only to say, "Gentlemen, you are using our timber faster than it grows, we must reduce your allowance." There will be no question of "mandatory" legislation or invasion of property rights. In Canada, a very large amount of revenue in several of the Provinces comes directly from the sale of stumpage and a decrease in the amount of timber cut means a decrease in revenue and a consequent increase in taxation. The question is vital and comes home to every citizen. Therefore the question is, if we have only enough timber for fifty years what are we going to do about it, not fifty years from now, but at once? What is the proper, business-like and commonsense way to handle the problem? In Europe it has been abundantly proved that you must spend money on your forests if you want to increase your revenue, just as you do on a farm or in a manufacturing plant. You must get the largest possible amount of timber from each acre. Many people seem to think that because a pulp or paper company has large timber limits, several thousand square miles, that they are in a strong position and have plenty of raw material for the future. This does not follow. There may be large burnt areas, large areas of swamp and water, it is a case where timber per acre is the important point. It does not take a financial genius to understand that it is better to have one square mile of land carrying 20 cords of merchantable timber to the acre within fifty miles of the mill than to have seven square miles carrying three cords of merchantable timber one hundred and fifty to three hundred miles away. There seems to be an idea that it is better business to have large areas of poor timber several hundred miles away from a mill than to take care of future requirements by planting right at the back door of the mill. Our Governments are at present selling the right to cut timber with practically no regulations which will insure the future productivity of the forest and with absolutely no regulations which will improve its condition or keep it on a basis of sustained yield. The amounts spent on fire protection and inspection are ridiculously small. No planting on a really commercial scale is being done. We are living on our capital. However signs are not wanting of a public awakening, brought about in large part by the far-sighted self interest of the pulp and paper industry. Their position is that they have an obligation to their stockholders to keep the plants running, to the region, to see that towns and country districts which have been developed as a result of the establishment of their plants, do not go the way of the saw-mill towns of Pennsylvania and the Lake States, and to the Provinces which by the lease of water-powers and timber limits make their existence possible. After all true patriotism is good business.

NEW "SHANTY BOOK."

A new form of "Shanty-book" has just been issued for the Quebec Department of Lands and Forests. A "Shanty-book" is a book which is issued to jobbers working on Crown Lands, in which they are required to enter the number of logs cut each day. Each time the scaler measures the logs cut he must copy his record into the "Shanty-book" and this must be open at all times for inspection by the Forest-Ranger. The regulations governing the cutting of timber are printed in the front of the book and the penalties for infractions with them in red. Information as to the general value of the forests to the public are set out on the inside front cover, together with advice as to avoiding forest fires and the reasons for not wasting timber. Forms for affidavits of those using the book are included and on the back is printed a poem by Andre Theuriet called the "Benefits of the Forest."

Mr. Beck Seriously Misquoted

Mr. Edward Beck, secretary of the Canadian Pulp and Paper Association, and members of the Association, have been the victims of a chain of regrettable circumstances in relation to the publication of an article dealing with the price of newsprint. By a particularly unfortunate mischance Mr. Beck's name was attached to this article, which expressed opinions directly opposite to those held by him and by members of the Association. In view of the wide-spread publicity given to this article, and the erroneous quotation of Mr. Beck as the author, it is only fair that we should briefly give the facts.

About a month ago Mr. E. P. Adler, chairman of the Paper Committee of the A. N. P. A., gave an address in Chicago which was reproduced in the American trade papers. That address was clearly intended to break the price of paper, the arguments being all in favour of cheap paper. Three weeks after the address was printed, it was copied by the Montreal Financial Times, who gave Mr. Edward Beck as the author of the address, instead of Mr. Adler. When the attention of the Editor of that paper was called to the mistake, he apologized for it, and stated that the substitution of names was a pure error.

Unfortunately the mistake did not end here. The Montreal Herald, which has adopted a bear attitude on paper stocks, re-copied the article from the Financial Times, without any attempt at verifying the authorship, and in spite of the fact that the responsible editor had been warned that the article had not been written by Mr. Beck. The article was given great prominence in the Herald, together with some comment which can hardly be called kindly. When the attention of the Herald was again called to the matter, they replied with a statement which was regarded as offensive in its nature. It was then decided to take up the matter with counsel, who was authorised to take whatever proceedings the circumstances seemed to warrant. This resulted in a more explicit apology on the part of the Herald.

In the meantime the statements which appeared in the Herald had been telegraphed to papers in the U.S., and were reprinted in at least one, and probably several, American publications, and was being employed to the great disadvantage of Canadian newsprint producers.

The views expressed in the article are so contrary to the policy of the Association, that its appearance, with the name of Mr. Beck attached, naturally caused bewilderment, particularly to those who know Mr. Beck intimately. The incident, too happened at a period when Mr. Beck had just taken over the secretaryship of the Canadian Pulp and Paper Association, and from that personal point of view, was especially unfortunate.

The officers of the Association at once took measures to offset the damage done by the erroneous publication of opinions of members of the Association. The publicity has caused not only personal annoyance but damage to the interests of the association, and legal advice has been taken as to what further steps shall be taken to protect those interests.

Note:—For the information of those who may not have noticed it at the time, a direct reply to the statements of Mr. Adler appeared in the Pulp and Paper Magazine for Nov. 3rd, on page 1123 is interesting.

FORESTRY ASSOCIATION LECTURE SERVICE.

Educational enterprises sometimes take novel forms but few educational novelties seem to have proved more successful in gaining public attention than the especially-equipped railway coaches employed by the Canadian Forestry Association.

One of the coaches, stripped of the usual seats, is packed with graphic exhibits, including models of forests, showing the devastation of forest fires, fire protection apparatus, wireless equipment, electrically lighted show-cases displaying hundreds of strange articles made from wood such as imitation silks and leather, wood distillates, etc. There are electrical illusions giving transformation effects from a beautiful forest to a burned ruin, and by means of scores of beautiful transparencies illumined by electric globes the aesthetic side of forest preservation is made highly impressive. In short, the purpose of the Forest Exhibits Car is to drive home the lesson that forest fires are a public enemy, affecting the personal welfare of every citizen of Canada.

During its tour of six months, more than 120,000 people visited the car. The trip covered approximately nine thousand miles. Every evening motion picture lectures were given by English and French speakers.

The Association's second travelling enterprise, the Tree Planting Lecture Car, travelled eight thousand miles in Manitoba, Sackatchewan, and Alberta, and fifty thousand people attended the tree planting lectures and demonstrations given by Mr. Archibald Mitchell, a well-known western expert, and his assistant.

The purpose of the Tree Planting Car is to take information and inspiration through a novel and interesting medium right to the front door of the settler who has greatest need of such help. The fact that the enterprise was connected with no government or commercial interest and was purely a citizen's movement gave it a particular appeal. Mr. Mitchell, the chief lecturer, has a great gift for rousing the interest of farmer audiences and a thorough mastery of the whole subject of tree planting under peculiar prairie conditions, gained by thirty years experience.

The Lecture Car was built with a sloping floor and special seating, so as to contain from 125 to 150 persons and at every stop, two illustrated lectures and demonstrations were given. In numerous instances, municipalities were supplied with complete working requirements and all sorts of societies were given practical help in improving school and church grounds.

The inspirational effect of such a tour cannot be over emphasized, for tens of thousands of men, women and children to-day have an intelligent comprehension of the value of shelter belts of trees in home beautification, in the prevention of soil drift, the protection of buildings and live stock and the improvement of moisture conditions.

Even in a highly unfavorable business year the Canadian Forestry Association succeeded in financing its educational enterprises from private sources with the aid of a few small government grants. The work will be continued throughout the winter through other channels developed by the Association.

Quite a lot of men have struck for shorter hours. They've got them all right, they're out of a job.

Don't look like an accident going somewhere to happen.

British Trade News

(FROM OUR LONDON CORRESPONDENT.)

London, Nov. 17, 1921.

It is regrettable to record that the Norwegian Steamer "Alf", which carried a crew of 18 hands, has been lost in the North Sea during a gale. The vessel was carrying a cargo of wood pulp to Queenborough from Drammen and 16 of the crew were lost.

Wood Pulp Association.

Owing to the exigencies of trade, the unsettled state of affairs, and other elements the British Wood Pulp Association will not hold their annual dinner this year. Heretofore, the event was one of the social functions of the year.

Newsprint Industry Hit.

The well-known makers of newsprint, Messrs. Thos. Owen & Co. of Ely Paper Works, Cardiff (Wales) announce that the half-year's dividend on the preference shares is being paid, but they much regret being unable to declare an interim dividend on the ordinary shares. The adverse conditions in trade and fall in values were especially marked in the papermaking industry, and the Directors say that so far there have been recently only slight signs of improvement.

Pulp Imports Reduced.

There was a falling off in the shipments of pulp to the United Kingdom during October—figures for which have just been issued by the Board of Trade. The total reached 46,942 tons, compared with 88,976 tons in October 1920. For the ten months, January to October, the supplies are 446,854 tons—all kinds of pulps—as against 925,663 tons in 1920—roughly one half of last year's shipments. To show what the pulp agents have been losing one has only to turn to the value of the shipments and I find the ten months' supply this year is put at £10,360,557, whereas last year, for the same period, the value stood at £24,369,029. The countries of supply are as follows for October last:—

Canada shipped 93,371 tons of wet groundwood for the ten months compared with 73,001 tons in 1920 and these figures are only beaten by Norway, a country that sent 146,853 tons between January and October as against 263,937 tons. The Dominion enjoys the unique position in groundwood of sending more shipments than the 1920 quantities. Another interesting point is while Norway values her 146,853 tons at £1,606,757, Canada's 93,371 tons are valued at £1,403,627.

Bleached Chemical (Dry): From Finland, nil; Sweden, 355 tons; Norway, 410 tons; Germany, 44 tons; Other countries, 50 tons. Total 859 tons as against 2,545 tons for October 1920 and for the ten months 11,556 tons, as against 24,490 tons.

Unbleached Chemical (Dry): From Finland, 3,539 tons; Sweden 9,852 tons; Norway, 1,175 tons; Germany, 89 tons; Other countries 1,162 tons. Total, 15,817 tons, as against 35,485 tons in October 1920 and for the ten months, 164,732 tons as against 424,517 tons in 1920.

Chemical wet: 808 tons in October, a reduction of 192 tons and for the ten months 1,878 tons as against 10,520 tons in 1920.

Groundwood (Dry): In October nil (October 1920 1,146 tons); for the ten months 3,076 tons valued at £50,835 as against 26,696 tons, valued at £754,879 in 1920.

There is today a small demand for groundwood. For other pulps the market shows more brightness and more enquiry, but the volume of business passing is not great. Prices are as follows:—Groundwood (wet) £4 15s; Groundwood (dry) £9; Bleached Sulphite (No. 1) £20; Easy bleaching £14½; newsprint quality £12; Unbleached Soda £11; Soda Kraft £11.

Exports of Paper.

The question may be asked: Is the British paper industry going ahead, or is it at a standstill? To the last part of the question the answer is in the negative and to the first part it should be explained that while there was an unprecedented demand for paper in 1919 and part of 1920, the fact remains that the domestic supply and the export supplies are not finding the consuming channels manufacturers would like them to. The rates of exchange and dullness in the markets abroad are telling factors and in the home market cheap foreign papers are to be met in all directions. Therefore, when we compare the exports between January and October this year with the same period last year, there is a falling-off to the extent of 32,065 tons of paper, so that it can safely be said the headway of the British mills n the export trade is, up to the present, small.

The total exports, including playing cards, boards, paper bags, etc. reached 120,944 cwts in October, as against 241,407 cwts in October 1920 and for the ten months 1,190,384 cwts, as against 1,831,688 cwts in 1920.

Paper Imports.

The imports of all kinds of papers, boards, etc., for the ten months, January to October, inclusive, are 266,704¾ tons, compared with 572,438¼ tons in 1920—or, roughly, a decline equal to about one half, so that foreign mills are feeling the pinch in their export trade just as much as the British. Newfoundland shipped 158,690 cwts of paper in October which is above the supply for the same period last year, but, still, for the ten months the 1920 figures have not yet been reached.

The Outlook.

The outlook, after the exports and imports have been studied, is not a very bright one for either mill men or pulp men in the United Kingdom. At present most of the mills are choked with raw materials and the tendency is to run machinery for the sake of keeping it going and oiled. The position of the pulp man is consequently not an envious one. Dull trade in paper is reflected on him and old contracts are gradually working their time out. From all accounts that reach me the mills are producing paper on high priced pulps—not pulps at the present day quotations—and to keep a footing in the market the paper manufacturers are compelled to sell below the cost of production, which is certainly not a paying game for any concern. With such domestic affairs, and depreciated rates of exchange abroad, it will readily be seen that the pulp and paper men of the United Kingdom are in a hard and tight corner and two elements are against them, viz.: (1) the demand for and the abundant supplies of cheap imported paper; (2) the money markets abroad. Within the last nine months, economy has been preached up hill and down dale with the consequent result that the British mills received a rude shock and during this shock the cheaply produced foreign product crept in and to-day it is in demand on all sides from a public point of view. It is now a question of time for the cheap article to be beaten down, at home and abroad. When it is, pulp men may look for a revival in trade.

PREFERS AMERICAN BOX BOARD

Incidental to the discussion of the practice of stamping Canadian made shoes with American names, which was recently brought up as a political argument, the Toronto Globe has something interesting to say about the use of American boxboard by Canadians. The passage reads:

While Mr. Frank S. Scott declares his shoe factory in Galt has discontinued stamping Canadian-made shoes with the American Eagle and American markings, he evidently prefers to get his cardboard cartons—in which he sends out shoes from the Galt, Ontario, house of Getty & Scott, Ltd.—at Monroe, Michigan, U.S.A. The cartons are marked "The Classic Shoe. For Children. Getty & Scott, Limited, Galt, Ont.," on two sides.

On one of the other sides appears the classification of the carton and underneath the makers. They are "The River Raisin Paper Co., Monroe, Michigan, U.S.A."

In Toronto, Niagara Falls, Montreal and other points there are firms manufacturing paper boxes for this trade. One Toronto plant has a capacity of 60 tons a day, and is not running full time, largely through American competition.

"Our product is a trifle higher in price than the United States product, due to the fact that we must pay for our pulp at United States currency rates. There is a 25 per cent. duty on these cartons. I might say that United States firms buy scrap paper in Canada and have been paying from $4 to $5 a ton more than current prices, but their object is to keep down the price of scrap paper on the other side by the small amount of Canadian scrap they can get," said one carton manufacturer of Toronto.

It was in his opinion that, when payment by Canadian firms in United States currency, freight and duty were taken into account, the difference in price between the Canadian and United States product would be negligible.

A traveller for Canadian cardboard cartons says that he was informed by a prospective customer who buys in the United States that he would not buy Canadian cartons even at 10 to 15 per cent. lower rates than those from across the line, because it was the intention to break the Canadian market and force supply of boxes at ruinous rates.

FORBEARANCE NEEDED.

I believe there is going to be a slow but gradual improvement in business conditions. It is my feeling we may wait a long while for a general activity. Meanwhile there must be mutual indulgence and mutual helpfulness.

Travellers exploring the ice-clad peaks of the Alps for their mutual protection tie themselves together; the nif one should happen to lose his footing he is supported and saved by the other members of the party. Business men are all walking in slippery places at this time. Any one of them is liable to take a tumble without warning.

It seems to me that while crossing this perilous track business men ought to tie themselves securely together. If one should stumble, others might thus be enabled to keep him on his feet.

You have noticed, perhaps, that when a tree falls in the forest it generally destroys, or at least injures, one or more other trees standing near it. When a business man or a business corporation fails, the disaster is seldom limited to the party that fails. Somebody else is apt to be hurt. One goes down and carries another down with him, and he in turn knocks the props from under a third, and where it will end no one can predict. Self-preservation, therefore, requires that we should stand together and avoid the beginning of trouble.

I think I can see better days ahead. There are rifts in the clouds that have hung over us for so long a time; but we are not out of danger and need to proceed with the greatest care. We want to be diligent, hopeful, courageous and, above all, to be patient and generous in our dealings with each other. In that way our recovery will be the more speedily accomplished; while a little imprudence might bring on a dangerous relapse.—C.F.M. in U. S. Paper Maker.

NEWSPRINT AND GROUNDWOOD EXPORTS UP.

Canadian pulp and paper exports for October were valued at $8,954,225, a decline of $9,751,780 as compared with October, 1920, and of $502,802 as compared with the preceding month of September.

Exports of newsprint for the month totalled 1,314,157 cwts., against 1,288,089 cwts. last year, an increase of 26,068 cwts. (1,303 tons), and exceeded September's figures by 190,021 cwts. (6,501 tons). They lost in value $1,404,690 compared with a year ago and gained $7,236 compared with last month.

Exports of pulp of all descriptions for the month fell off by 243,162 cwts. in quantity and by $4,490,235 in value as compared with last year, and by 56,388 cwts. in quantity and $594,914 in value as compared with September.

Exports of pulpwood for the month amounted to 47,023 cords, valued at $587,674, compared with 124,390 cords, valued at $1,752,923, in October last year, and with 49,608 cords, valued at $664,420 in September. Comparative details for October, 1920 and 1921, follow the quantities being stated in hundredweights:

	1920		1921	
	Volume	Value	Volume	Value
Book paper	4,411	$ 43,802	2,239	$ 17,718
Newsprint	1,288,089	6,915,294	1,314,157	5,510,604
Other paper	......	1,139,158	......	338,397
Total	......	$8,128,254	......	$5,866,719
Sulphate	279,080	1,827,448	244,079	743,693
Sulphite, bl.	208,620	1,963,401	111,147	459,613
Sulphite, unbl.	402,565	2,800,095	271,018	852,341
Groundwood	536,329	1,986,807	557,188	1,031,859
Total . ..	1,426,594	$8,577,751	1,183,432	$3,087,506

Countries of destination were: Paper—United Kingdom, $96,839; United States, $5,233,258; other countries, $536,622. Pulp—United Kindom, $660,758; United States, $2,164,008; other countries, $262,740.

Comparative figures for the first seven months of the current fiscal year show:

	Paper	Pulp	Total
1921	$39,246,227	$18,891,665	$58,137,892
1920	51154,018	52,795,463	103,948,481
1919	33,074,162	22,535,388	55,609,550

Exports of pulpwood to the United States for the seven months' period were as follows: 1921, $6,134,459; 1920, $9,556,255; 1919, $5,526,582.

SCIENCE FOR INDUSTRY.

London, Nov. 17, 1921.

Editor, Pulp and Paper Magazine:—

Apropos the editorial in the "Pulp & Paper Magazine" of October 27th last, headed "Drawing Blood," I commend a second reading of it to all pulp and paper men in the Dominion. Is it fully realized that the Technical Section is, as the editorial rightly says, "the bone" and "the papers and discussions the blood of the Section?" Let us hope that no one in Canada thinks the Section a makeshift. On it depends the future of the pulp and paper industries and the fact cannot be driven home too strongly. Up to the present the Section has been admired for its methods and those who do not sympathize with it must remember we are in an age of science—upon which our industries are gradually being worked—and that a new school is gradually coming to the front to revolutionize the work of the past. Therefore, Canada must "wake up!"

Sometime ago I heard Mr. Balfour, who is now at the Disarmament Conference on behalf of the United Kingdom, and whose knowledge of science must be respected, state that the industrial progress of mankind was going to be in the near future more and more dependent upon the alliance of science and industry and upon the co-operation of different branches of science with each other. Science is now, he added, an essential element in industrial progress. "I do not think the Germans have shown any greater aptitude for science than our own fellow-countrymen," he went on, "and I am sure they have shown no greater aptitude for industry; but beginning as they did rather late in the day, with their great powers of governmental organization, with their highly developed and equipped universities, and with the view which they have always entertained of the close alliance that ought to exist between knowledge and power, they naturally and easily did what we, with more difficulty and at a later date, are beginning to do. They marshalled, they mobilized all the forces of science in helping them to develop their great industrial efforts. We must not imitate them; but we must follow their example! They saw what, from the nature of the case, we could hardly be expected to see so soon—how close was this co-operation, how absolutely necessary it was, not merely in the competition of people with people of industry with industry, and of one community with another community, but from a broader point of view—the point of view that we ought to adopt is, that it is only upon our increasing knowledge of the powers of nature that we can expect to improve the material lot of man. But if you wish to improve the lot of man it can only be, not by quarrelling over the manner in which profits are to be distributed or by any of the controversies which divide various interests—it cannot be by those means, though they are subjects we cannot avoid the thing which is really going to make a difference in the future, to make the remainder of the 20th century different from the 19th century, and the 21st century different from the 20th, is the command, for industrial purposes, which man has over the forces of nature. That can only be attained by the cultivation of pure science, of science for itself, of knowledge for its own sake. It can only be if we strive to breed and to educate men who, without any thought of selfadvancement, are consumed by a curiosity to know, and, that end having been attained, then to learn how to apply the knowledge which they have disinterestedly acquired to the great purposes of industrial development." Let industrial progress be the theme for all men in the Dominion's paper and pulp industries and at the same time bear in mind that the Technical Section is the medium for developing scientific organization.

J. BOOTH

REDUCTION IN FREIGHT RATES.

The Canadian Pulp and Paper Association have transferred their traffic department from Toronto to Montreal. Mr. G. Ruickbie, manager in charge of the department, has his office in connection with those of the association in the Drummond Building, Montreal. It is intended to give more attention to this department in the immediate future.

The department has issued the following circular on the revised freight rates as affecting pulp and paper shipments.

It is expected that most of the new tariffs providing for the general reduction in freight rates ordered by the Board of Railway Commissioners to become effective December 1st will be ready for distribution by the Railways early next week.

It may be several days after December 1st before tariffs applying between points east of Fort William and points west thereof can be got ready for distribution. In this event members will be well advised to keep a careful record of any shipments they may have moving between the territory in question as the Board's order is specific that the reductions shall take effect December 1st and if the Railways are unable to have their new rates in the hands of their agents and the shipping public by that time they will have to make them retroactive, to comply with the Board's order.

So far as the Pulp and Paper Industry is concerned rates on pulpwood and paper between points in Canada, Fort William and east will be reduced approximately 7.4 per cent, in other words the new rates will be 25 per cent higher than those in effect prior to September 13th, 1920 instead of 35 per cent higher as at present.

Between points west of Fort William the reduction will be 7.7 per cent or 20 per cent higher than the September 1920 rates instead of 30 per cent higher as at present.

Rates between points east of Fort William and points west thereof will be reduced in the same proportions.

Transcontinental commodity rates will be reduced about 7.5 per cent or to a basis 23 1/3 per cent higher than September 1920 rates instead of 33 1/3 per cent higher as at present.

Mileage rates on pulpwood in Eastern Canada for distances over 125 miles reduced last July and no further reductions will take place under the Board's order. For shorter distances rates will be reduced one half cent per 100 lbs.

Other raw materials (excepting coal and crushed stone) moving between points in Canada will be reduced approximately 7.4 per cent east of Fort William and 7.7 per cent west thereof.

The Board's order does not affect International rates nor export and import rates to and from seaboard ports, nor does it make any reduction in rates on coal as these were not advanced in September 1920 to the same extent as rates on other merchandise. It also excepts crushed stone rates which did not receive any increase in 1920.

What maintains one vice would bring up two children.
—Franklin.

THE ONTARIO TIMBER PROBE.

By A. B. BAKER.

In the comment of the government investigation of former abuses in connection with timber leases much is heard of the amounts to be re-claimed by the Provincial Treasury, but little is said about the enormous cost of the investigation. The lumber companies have no doubt been exceedingly wicked. Some have made restitution, and others are said to have offered large sums in settlement. These have been refused and the probe continued.

As a matter of cold fact, however, it is purely a question of what money the government is going to recover. No one suggests for a moment that there was any actual and intentional fraud on the part of either the heads of the companies involved, or of the officials or ministers of the former administration. Carelessness or incompetence is about the worst that can be charged, and it is a question therefore whether the game of hide and seek is worth the candle—whether we are not spending far in excess of any possible recovery.

Under the circumstances, is not the Government very like the railway switchman in the plaintive old ballad telling how:

Out in the night rang the accents wild,
Switchman, oh! switchman! Save my child!
He threw the switch in the bat of a lid.
Killed eighty people, but saved the kid.

-Monetary Times

EXPORT PAPER CO. IS NOW RE-ORGANIZED.

Announcement is made by the Canadian Export Paper Company, of Montreal, that its reoganization plans, recently undertaken, are now complete, and that Mr. E. L. Crooker, of the Laurentide Company, is in charge of the company's affairs, assisted by a permanent board of management, representing Price Brothers and Company and the Brompton Pulp and Paper Company. The re-organization was brought about by a desire to bring the mills which export products through the company's agency into closer relationship with their customers.

The company now controls for export purposes some 80 tons of newsprint a day, the output of three of the largest and best equipped mills in Canada. This enormous tonnage enables them to undertake the entire requirements of even the largest consumers of newsprint without inconvenience or risk of disappointment, while the company's extensive operations also make possible the economical handling of its products and the prompt solution of any emergencies that may arise.

Mr. Crooker, the manager in charge, has long been associated with the paper business, and for several years past as sales manager for the Laurentide Company, Ltd., in which capacity he has represented the company both in the United States and Great Britain, as well as in Canada. He has an extensive acquaintance with newspaper publishers in all three countries.

U. S. PULPWOOD COMMISSION ABANDONED.

Washington, D.C.,—No United States commission will be appointed to seek the removal of Canadian restrictions upon the exportation of pulpwood was proposed in a resolution passed by the United States Congress last session. This was indefinitely stated at the White House yesterday.

The resolution, which was introduced by Senator Underwood authorized President Harding to appoint a special commission to confer with the Canadian authorities regarding the pulpwood restrictions.

It contained a hint of retaliation, the commission, under its provisions, being authorized to consider what measures could be taken to secure the removal of the restrictions, it was understood to have been passed at the behest of United States publishers who believed that with the resultant increase in supply from Canada to the United States mills the price of print paper in the United States would be reduced. Many United States paper manufacturers were also in favor of some such move.

The White House statement said that it had been definitely decided not to appoint any commission and added that if there were any cases of unjust discrimination they would be dealt with by the Canadian Government.

GUY TOMBS FORMS FREIGHT BROKERAGE COMPANY.

A step in the re-organization of the Canadian Export Paper Company, Limited, is shown in the following statement by President Chahoon:

"It has been decided to discontinue the traffic department of this company and Mr. Guy Tombs the general traffic manager has with our approval, formed a company to carry on the business of traffic managers and freight brokers, under the name of Guy Tombs, Limited, with offices at 285 Beaver Hall Hill, Montreal.

"We have pleasure in announcing that arrangements have been made with Guy Tombs, Limited, to supervise the transportation of paper sold by this company, therefore all communications having reference to such matters should in future, be addressed to them.

"Mr. Tombs, through his company, will continue to direct the traffic of the individual mills in this organization."

Mr. Tombs confirmed the report that he was going into business for himself.

"The decision to capitalize my thirty years of activities in transportation service was more or less forced on me," said Mr. Tombs, "by some impending changes in the composition of the associated paper mills in the Export Company, and the fact that the public insists on treating me as if I were still in the railway business. I have, therefore, obtained permission to take over on December 1st the traffic department of the Export Company under the name of Guy Tombs, Limited, general freight and shipping brokers. We will continue directing the tonnage of the principal paper mills and also undertake the solution of traffic problems generally, giving special attention to the handling of over-seas business through Canadian ports."

In addition to an experienced staff especially trained in export work, the new organization is fortunate in its directorate, which is as follows: President and manager, Guy Tombs, for many years assistant freight traffic manager, Canadian Northern Railway; Secretary, P. Daniels, late of the Canadian National Railways, Montreal; treasurer, Capt. W. H. Carling, M.C., formerly of the Bank of Montreal, London, Ont.; directors, N. P. Dalziel, secretary of the Canadian Export Paper Company, Limited; Mr. L. S. Colwell, Frank B. Common, M.A., B.C.L., of Brown, Montgomery and McMichael, and others identified with the pulp and paper industry.

PULP AND PAPER NEWS

A somewhat startling statement was made last week, by Professor J. H. Faull, of the Faculty of Forestry of the University of Toronto. In discussing the question of the toll taken by timber diseases in our unregulated forests, he said that these diseases, although not understood as well, cause greater loss than forest fires, destructive as the latter are. In these columns, attention is frequently directed to the appalling manner in which our forests are annually depleted by fire. Hence the foregoing statement by Professor Faull is nothing less than startling in the extreme. Professor Faull added that a better understanding of timber diseases would be of benefit as follows:

(1) Judging from Europe's experience in forestry, controlled forests can be kept healthy.

(2) A knowledge of timber diseases will make possible a more rational system of leasing and cutting.

(3) The importation of healthy stock can be almost assured.

(4) Industries can be helped in a choice of sound timber.

(5) Direction can be given to any scheme of reforestation that may be adopted.

The Professor mentioned the needle blight of white pine and butt or heart rot as two of the chief diseases. Studies have been undertaken in the Faculty of Forestry for the purpose of elucidating the factors and causes that favor these diseases, and adequate surveys with respect to these matters promise to give guidance in the choice of lands to be leased and that are ready for harvesting.

With respect to spruce, Dean Howe, of the Faculty of Forestry of the University of Toronto, also made a disquieting statement, last week. He said that owing to the methods of lumbering employed, spruce is being crowded out of the forest areas of Quebec, Ontario and New Brunswick, and that, in some places, it is being cut down six times as fast as it can be replaced by Nature. Dean Howe's judgment is valuable, for under the auspices of the Commission of Conservation, now abolished, he surveyed more than 10,000 acres of cut-over pulpwood lands to determine the rate at which spruce and balsam were re-establishing themselves after logging. He established 25 acres of sample plots where conditions affecting the regeneration of the pulpwood species can be closely studied through a series of years. In co-operation with certain pulpwood companies more than 600 acres of experimental cuttings have been established. The idea of this is to find some modification of the present cutting methods that will increase the amount of young growth of spruce .

In accordance with an arrangement previously recorded in these columns, a deputation of striking printers, headed by Mr. Andrew Gerrard, president of Local 91, International Typographical Union, met Premier Drury, last week, and requested him to insist on Government printing being done in "fair" shops, and that it carry the Union label. They objected to government printing being turned over to sub-contractors by the Methodist Bookroom. A further conference has been arranged between the Premier and the striking printers.

Representations to the effect that 40,000 men are without employment in the St. Maurice district, and that unless immediate steps were taken to provide them with work, many of these would be exposed to starvation, were made last week to Premier Taschereau by Messrs. H. Ortize, manager of Grand Mere Municipality and Mr. H. Valiquette, manager of Shawinigan municipality. These two representatives asserted that the closing of the lumber camps, and the decrease in wages, had brought about the climax of the situation, and that something had to be done immediately. They further made the suggestion that public works should be started in all towns and municipalities where unemployment had reached such a pitch, and stated with regard to Grand Mere and Shawiningan, that those two towns were ready to defray the cost of one-third of such work if the Federal and Provincial Governments would provide for the other two-thirds of such cost. Premier Taschereau stated that the matter would be given consideration, and an answer given in a few days.

The town of Newcastle, and the Dominion Pulp Mill, across the river from Chatham, are in receipt of power from the hydro-electric power plant of the Bathurst Company, Limited, at Nepisiguit Grand Falls. An experiment was made on the opening day, and as everything worked satisfactorily, once a few minor changes had been effected, the transmission was immediately turned into a permanent operation.

Mr. A. L. Dawe has made several trips for the Canadian Export Paper Company, and has, we understand, secured some good business.

At the annual meeting of the Canadian Forestry Association, to be held in Toronto on January 10, a feature will be a discussion of means to secure a course of practical forestry.

Mr. T. J. Stevenson, President of the Riordon Sales Corporation, recently met with a slight accident. He slipped on the pavement of St. Catherine Street, Montreal, and fell, bruising his left shoulder to a degree which necessitated a sling.

The Book and Writing Paper Section of the Canadian Pulp and Paper Association held its monthly meeting in Ottawa on November 25. All the reports of trade conditions were of an encouraging nature.

The Forestry Branch News Letter, No. 194, issued by the Dominion Government is an interesting and well gotten up sheet and shows the attitude now being taken by the Dominion and Provinces of getting the people at large interested in public questions. The people must become interested in the people's business and once their interest is aroused progress will be rapid. The Government of Ontario is doing much the same thing by carefully prepared matter issued to the newspapers giving the public information and instruction in forest fire protection and tree planting.

NORWEGIAN PULP MEN VISIT CANADA.

Mr. Christian Vig, managing director of the Hunsfos Company, manufacturers of newsprint, Christiana, Norway, paid a short visit to Montreal during the week of November 21. Mr. Vig was for many years operating manager of the Union Company, the largest paper manufacturers in Norway, and is regarded as one of the ablest men in the Norwegian paper industry. He was accompanied by Mr. John Poulsson, managing director of the Norwegian Cellulose Association, Christiania, and also head of the Toten Cellulose Company.

These gentlemen called at the office of the Canadian Pulp and Paper Association, and thanks to the good offices of Mr. G. F. Steele, visited the plants of the Laurentide Company, Grand Mere, and of the Belgian Industrial Company, Shawinigan Falls. Mr. Steele also entertained the visitors to luncheon at the Ritz Carlton Hotel.

In discussing future possible competition of Norwegian paper mills with those of Canada, Mr. Vig gave the impression that, on the new price basis for Canadian paper, recently announced, there is not a great deal of latitude between Canadian prices and those at which Norwegian mills can afford to lay down their production in the U. S. Mr. Vig totally discouraged the idea that the Scandinavians are out to secure any undue advantages over Canadian and American competitors in the American market. He also scoffed at the suggestion which is being freely circulated by some American publishers that Scandinavian paper in large quantities can be laid down in New York and sold at a price of $50 per ton or thereabouts.

Mr. Vig was much impressed with the Canadian mills he visited. He stated that Norway had nothing to compare with the Laurentide plant and he had not seen anything to equal it elsewhere.

The object of the visit was to enquire into conditions here and in the United States. Mr. Vig and Mr. Poulsson left Montreal on November 23rd for New York, with the intention of sailing for home in a week or 10 days.

NEWSPRINT PRODUCTION INCREASED.

New York, November 21.—Forty-four newsprint companies in the United States and Canada, comprising more than 90 per cent. of the total, reporting to the Newsprint Service Bureau for October had an output of 156,844 tons of paper. Shipments amounted to 165,265 tons. Production includes 1,713 tons of hanging paper usually classed with newsprint.

October production was 13,372 tons (9 per cent) increase over September output. Shipments increased 22,972 tons, or 16 per cent. There was one more working day in October than in September.

Production by United States mills, according to the Bureau, during the first ten months of 1921 was 252,161 tons, or 24 per cent. less than the corresponding of 1920. A strike which tied up some mills for more than two months early this year restricted output.

Production of Canadian mills ten months of 1921 decreased 79,447 tons compared with 1920, a decline of 11 per cent. Combined production, in both countries, was 331,598, or 18½ per cent. compared with 1920.

Total stocks at mills October 31, 1921, were: 31.990 tons, equivalent to about four days' production. Stocks at the end of October were 8,640 tons less than September 30.

THE PULP OUTLOOK OF CANADA DISCUSSED.

At the recent meeting of the British Columbia Forestry Convention, which was held in Vancouver, interesting papers prepared by A. L. Dawe, secretary of the Canadian Pulp and Paper Association, Montreal, and by A. E. McMaster, secretary of the Whalen Pulp & Paper Mills, on "The Outlook of the Pulp and Paper Industry in Canada," were read.

In both papers the need of a more reasonable use of the timber resources of the country, and the adequate provision of methods of replacement was stressed. The industrial status of Canada, declared Mr. Dawe in his paper, depends in part, and in the future will be, directly dependent upon the success or failure of the timber industry, which is Canada's natural and greatest industry. Proper methods of handling timber, and of replacement were urged, the speaker declaring that it would mean the ultimate saving of costs in the pulp and paper industry.

In dealing with the pulp and paper situation in British Columbia, Mr. McMaster declared that the Pacific coast province had barely entered upon its career as a great timber producing country. He emphasized the need of research work, and deplored the lack of technical data on timber subjects in B.C. The total value of pulp and paper industries in B. C. in 1919 was $12,000,000; and in 1920 this reached a total of $21,000,000. This year, declared the speaker, the total would be in the vicinity of $15,000,000.

IF I WERE BOSS.

If I were boss
And there should come to me
A worker who had failed most miserably,
But who had tried and done his best to make
Success, but stood defeated through mistake
I'd grasp that worker by the hand and say—
All right, old pal—more luck another day—
If I were boss.

If I were boss
And found a man who stayed
In shallow waters—timid and afraid—
To venture lest he fail—and played the game
So others caught the censure and the blame
I'd call that person to my desk and say:
You've just resigned, old top—be on your way.

—Griff Crawford.

WATER FLORA AS PULP.

A German mill is reported here to have secured a patent for its treatment of fresh water flora as a material suitable in the manufacture of pulp. Experiments have been carried out with it and the results are said to be satisfactory, so much so that a company is being formed. This is all the information available up to the present and it may be taken for what it is worth.

$75 PER TON FOR NEWSPRINT.

The Canadian Export Paper Company, Montreal, has officially announced a price of $75 a ton for newsprint sold under contract for the first quarter of 1922, a reduction of $5 a ton from the current price.

The height of harmony: French pheasants singing the mayonnaise.

CANADIAN TRADE CONDITIONS.

Toronto, 26th Nov.—Somewhat less activity has been in evidence in certain lines of the paper industry the last week or two. It would be easy to make too much of this, however. Business is still good—indeed, very good in comparison with what it was like three or four months ago — but it has, just now, a "spotty" and spasmodic look about it, in one or two directions, which those who should be good judges of the weather in the pulp and paper industry had certainly not looked for it to exhibit at this stage. It may be that this decrease in activity is due to the smaller demand than was anticipated for paper for holiday purposes. That is a view that one has heard expressed, though the writer cannot, for his part, coincide in it. What seems more likely is that the end of the year is approaching and, while at this season there is always a disinclination to carry over large stocks into the New Year, that disinclination is, this year, more pronounced than usual by reason of the uncertainty as to prices, and indeed, conditions generally which have been, until quite recently, so prevalent for a year now and the effect of which cannot be expected to wear off in a day. It is all very well for distributors of certain lines of papers to tell the consumer that no price recession is to be apprehended, but that on the contrary, an advance in prices, may be imminent. Quite frankly, the consumer does not believe them. He has, he says, heard this line of talk much too often during the past year to be in any way impressed with it. During this week, the writer happened to be in conversation with a couple of retailers doing business in a large way. The question as to whether the somewhat decreased demand now being felt would result in price recession happened to crop up for discussion. Both of them were confident that it would. On the other hand, a prominent producer, to whom the writer mentioned the opinion of these two men, utterly scouted the idea.

It is undoubtedly unfortunate that the condition of progressive betterment which, on the whole, has unquestionably set in, should have been delayed at all, albeit only momentarily. It is regrettable from a psychological point of view, because, in the light of its recent experiences, the industry is not in such shape as to take even a temporary setback in any excessively philosophical spirit. It is regrettable too, from a material viewpoint. For many of the manufacturers have been getting on the right side with Messrs. Profit and Loss only very recently, indeed. This week, one of the more prominent of the mill owners showed the writer confidentially the monthly figures, in this regard, relative to his concern. Only during the last three months—that is to say, September, October and the present month, so far as it has run—was any profit shown at all. For some of the preceding months the loss was of a kind literally to make one's hair stand on end. And yet, to read some of the articles in the daily press, one would imagine that the practice—or, as it seems, in some quarters, to be regarded, the pastime—of paper-making was synonymous with huge profit-making. However, though orders are not as yet showing signs of becoming heavy as quickly as had been anticipated, there is nothing in the situation thus far to detract appreciably, if at all, from the opinion that has been expressed of the outlook in these columns as distinctly good. That the general tone has immensely improved, during the last few weeks is a patent and obvious fact, while the prevalence of greater confidence is evidenced by the circumstance that mills are continuing to produce to greater capacity.

GROUNDWOOD:—On the whole, it is generally true to say that there is no money in groundwood to-day. News groundwood can be bought at the groundwood mills, for from $25 to $28 a ton. Prices of the best groundwood run from $28 to $35 a ton. These figures, it may be added, are based on prices that are actually being paid now. There is no supposition about them—they are the actual prices being paid.

PULPWOOD:—The sales of pulpwood continue to be very far from numerous. It is possible, according to those in a position to know, to buy peeled spruce at prices equivalent per cord to sixty per cent., less than those which obtained in the same localities about a year ago. Of course, if the present conditions of very limited cutting continue, as they appear certain to do, over the present winter, there may likely be a considerable shortage next year, with a consequent enhancement of prices, assuming a good demand.

PULP:—The somewhat better demand for pulp continues. But the prices that can be obtained cannot be regarded as satisfactory to those who produce it. For instance, prices actually being paid, at this moment, are as follows: For natural, $75 per ton; for bleached, $85 per ton; and for easy bleaching, $85 per ton. In each case, the price ought to be $5 per ton more to be moderately satisfactory to the concerns producing the pulp. The prices named are at the mill and in Canadian funds.

TOILETS AND TISSUES:—Mills report that they are running full on toilets and tissues. As regards the latter, it is possible that part of the briskness may be attributable to seasonal demands. But, on the whole, concerns producing these lines conceive that they have reason to be pleased alike with the present business they are doing and with the future outlook for their branch of the industry.

WRAPPING PAPERS:—The business in wrapping papers continues good. Particularly is this activity noticeable in the kraft aspect of the situation, and especially, in that connection, with the demand for glazed kraft.

MANUFACTURING STATIONERY:—Business in manufacturing stationery is brisk. A distinct improvement in this line has been noticeable in the last few weeks.

OTHER LINES:—In various other lines, the imminence of the Dominion election has had a somewhat unsettling effect. This is, perhaps, only natural in view of the prominence of the tariff issue in the present election campaign. When once the election is

OF DERBY HATS AND FISHING RODS, OF NAILS AND OTHER THINGS.

By C. B. SCOTT

Manager, Bureau of Safety, Chicago.

Once upon a time a man thoughtlessly walked into a generating station with a long steel fishing rod over his shoulder and the timely application of the prone pressure method of resuscitation saved his fast ebbing life.

Ever after and even to this day men about the plant are telling how foolish the man was. It was indeed a foolish thing to do, but not more foolhardy than some of the everyday thoughtless things many experienced electrical workers do. A long steel fishing rod is no better conductor of electric current than a wire in a derby hat, a concealed nail in a shoe. The long rod is only more conspicuously visible and easier to place in contact with the source of electrical energy. We have only heard of one fishing rod incident, but we have also heard of fatal electrical accidents caused by the hat wire, the nails in the shoes, finger rings and watch chains.

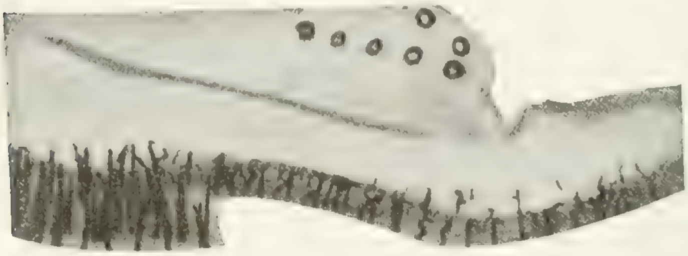
Invisible Hazards are Often Disregarded.

One reason why there are so many accidents due to electric current is because the current is not visible. Visible hazards are not so often disregarded as the ones which cannot be seen. Unguarded moving machinery looks dangerous even to the inexperienced.

Every person does not so readily distinguish the invisible current of electricity. Men employed in the business of electrical production and distribution often have to apply a test to ascertain if wires or equipment are electrically alive or dead. It logically follows that greater care is required in connection with electrical hazards than in the presence of the visible sources of danger.

Too little attention is given by electrical workers to the subject of unsafe clothing, and by unsafe clothing we mean clothing containing metal parts. No workman in a generating plant is safe while wearing shoes with metal nails, a hat with wire in the brim, metal finger rings, watch chain, clothing with metal buttons, glasses with metal or flammable frames.

Men who persist in ignoring these things need urgent admonition just as much as did the unwise fisherman In fact, they need it more, because anyone could see and appreciate the folly of the man carrying the fishing rod.



Electrical Workers' Shoes Should Have Wooden Pegs, Not Nails.

Shoes worn by men subjected to electrical hazards should have wooden pegs instead of metal nails, derby hats and cap visors should be examined for metal parts and if they contain these should not be worn.

Inflammable visors or eye shields should be prohibited. To sum it all up, particular precaution should be taken not to wear any clothing about electrically charged wires or apparatus which contains any metal or inflammable part. No metal trinkets should be worn.

The difference between visible and invisible hazards is clearly shown in the accompanying illustration of the anatomy of a pair of shoes which were worn by a deceased electrical worker at the moment of his decease. The picture is prima facie evidence of a danger almost as obvious as a picture of a man entering an electrical plant with a steel fishing rod on his shoulder.

—National Safety News.

FORESTRY MATTERS IN CONGRESS.

Washington, D.C., Nov. 30. The whole American forestry question will be threshed out before the Agricultural Committee of Congress in a solid week of hearings beginning January 9.

This is the announcement made by Chairman Haugen of that Committee and comes as the climax of a year of work by the National Forestry Program Committee to get a through plan for the maintenance of the nation's forests before Congress for action.

It is just a year ago that the National Forestry Committee was named, with the paper industry, as represented by the American Paper and Pulp Association, the lumber industry as represented by the National Lumber Manufacturers' Association, the public as represented by the American Forestry Association, the publishers as represented by the American Newspaper Publishers Association, and other national and local groups, as members of the committee.

From this union of widely different interested groups, all realizing the need for unified action in behalf of the forests, came the Snell bill, in which the widely differing ideals of different groups were harmonized in the first comprehensive plan for forestry legislation to be offered in Congress.

Hearings last January came as Congress was about to adjourn, and action went over to the sixty-seventh Congress, where Congressman B. H. Snell again introduced his forestry bill, as approved not only by the Federal Forest Service, the American Forestry Association, the American Paper and Pulp Association, the American Newspaper Publishers Association, but also by the National Lumber Manufacturers' Association, the American Association, of Wood Using Industries, and other similar groups.

The introduction of essentially the same bill, carrying in addition a provision for federal assistance in establishing Roads of Remembrance of trees, followed in the Senate, Senator Medill McCormick of Illinois being the sponsor.

In all this campaign the paper industry has figured as one of the leaders. Its program, outlined at a hearing before the committee, was formed, was adopted in principle, and the Central States Forestry League, consisting of the eight states of the lake region, has practically accepted for the central states program, the recommendations of the forestry committee of the American Paper and Pulp Association of which Frank L. Moore is chairman.

The Beveridge Supply Co., Montreal, have taken a very active part in the "Better Package" campaign. They sent out a lot of literature in both French and English.

The Port Arthur Shipbuilding Co., Canadian builders of the Niagara beater have just issued an attractive leaflet on this new development in paper making machinery.

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over, and a clearer view of tariff possibilities is obtainable, the unsettlement will likely largely disappear.

NEW YORK MARKETS.

New York, Nov. 26. (Special Correspondence). - Business in paper, insofar as regards transient demand, has been rather quiet this week in New York, yet the market as a whole is characterized by a good deal of life, and reports generally say that operations at mills have diminished but little. Here and there a paper manufacturer has found it necessary to curtail production to some extent because of the slowing down of current demand, but a large majority of paper and board mills are running at a good rate of capacity and have sufficient orders on file to absorb practically all of their output for some weeks ahead. It might be said therefore that while retail trading in most grades of paper has quieted down, the industry at large, and particularly the manufacturing branch, continues fairly active.

It is not surprising that demand for paper has eased off at just this time. The fact should not be lost sight of that during the past several months consumers have bought quite heavily—many, no doubt in large enough volume to cover their requirements for a time ahead. It is but logical that some of them have now let up in their buying, being satisfied to keep out of the market for a while when having wants taken care of by paper on order, and presumably desiring to reduce their stocks for the approaching inventory-taking season. For this reason a consensus of opinion is that general business, aside from retail buying for the holidays will rule rather quiet up until the close of the year. Following that time, everyone is looking for the markets to open up with a rush, and for brisk business.

Announcement of a further cut of $5 a ton in the contract price of newsprint for the first quarter of 1922 by Canadian manufacturers was not unexpected here. This matter has been the chief subject of discussion in the local trade for some time, and it was generally anticipated that a reduction of approximately the size made would be announced. Trade sentiment now is that newsprint prices are down very near to complete readjustment. There are some who still stick to the belief that prices will eventually work down to around 3.50 cents per pound or a quarter of a cent. a pound below the $75 a ton basis fixed for first quarter of 1922 deliveries by Canadians, but there are few, if any, who look for print paper values to fall below this level. It must be acknowledged even by consumers that the statistical position of newsprint is very strong. Consumption in the United States is holding up remarkably well this year, running only about 4 per cent behind 1920, the largest on record, while it is estimated that mills in this country will produce 300,000 tons less this year than last, owing principally to operatives' strikes, which have not yet been settled in a good many plants. Import figures do not strengthen the belief that German paper can affect the American market to any great extent. German and Scandinavian countries this year will not send the U. S. much over 100,000 tons of newsprint. We will require approximately 2,000,000 tons, so that the difference between our production, estimated at 1,200,000 tons in 1921, will have to be made up by Canadian producers who normally supply one-third of our needs. Members of the trade are discounting the bugaboo of German competition. Advices from authoritative sources on the other side of the Atlantic say that some contracts from American publishers have actually been accepted by German paper producers at 2.50 cents. a pound, but that deliveries will not be made against orders at this price. Current prices on German and Scandinavian newsprint range around 3.25 cents. per pound landed, and it seems very doubtful whether foreign newsprint will be shipped here at less than this cost for a long time to come, with the obvious result domestic and Canadian manufacturers should easily be able to maintain their prices at 3.50 cents or a little higher.

Book papers hold steady in price at around 6.50 cents. per pound, basis on machine finished book f.o.b. New York, and are moving in fair tonnage against back orders though fresh demand is slow in developing. Tissue papers are firm and in rather good demand. Kraft wrappings are freely sought by consumers and jobbers, and quotations rule steady at 7 cents basis f.o.b. New York on No. 1 domestic kraft. Fine papers are holding their market position moderately well, with demand showing a gradual increase. Plain box boards are in quieter demand and prices have sagged a bit further to about $37.50 per ton, f.o.b. New York, on filled news board and $35 on plain chip, but container boards and corrugating boards are in active demand. Mills making container boards are rushed, and the trade is commencing to feel that the present situation in this industry is not due to pre-holiday seasonal reasons but to a permanent increase in the use of fibre containers for shipping merchandise.

GROUND WOOD:—There has been a slight slowing down of demand for mechanical wood pulp, but the market tone rules firm and quotations are on steady levels. Indications are that a majority of grinders

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Safranine B.S.
Safranine R.F.F.
Methylene Violet 2R. conc.
Methylene Violet 2B. conc.
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NEWS BLUE

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Paramine Sky Blue F.F.
Paramine Blue 2B.
Paramine Black B.H.
Paramine Yellow R.
Paramine Brown G. conc.
Paramine Brown M.
Paramine Fast Bordeaux B.
Paramine Green G.
Paramine Violet N.
Paraphenine Yellow G.
Diazamine Fast Yellow H.
Rosophenine 10B.
Benzopurpurine 4B.
Paper Black 3181

ACID COLOURS

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Orange IV.
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have disposed of the bulk of their output for sometime ahead, and, being handicapped in increasing production by poor water conditions, haven't much surplus to dispose of and therefore are enabled to refrain from pressing buyers. Between $30 and $33 per ton at producing mills is the general range of prices of domestic and Canadian grinders, with importers of Scandinavian ground wood reported asking $34 and higher per ton, ex the dock, for pulp on the spot in this country.

CHEMICAL PULP: Although reports mostly are to the effect that paper manufacturers have let up in their buying of chemical pulp to a very noticeable extent, the market continues to exhibit considerable activity and quotations are well maintained. There is a particularly good call for bleached sulphite and for kraft pulp. Domestic producers of the former are understood to be sold up for several months ahead, and the few lots of strictly No. 1 bleached sulphite that become available in the spot market off and on are said to be freely bringing 4.50 cents. per pound, while quotations in this connection are strengthening as December 1 draws near when the new contract basis of domestic producers of 5 cents. per pound on bleached sulphite becomes effective. Foreign bleached is quoted at 4.25 to 4.50 cents., ex the dock, and it is stated that a large New England paper mill has just contracted for a big tonnage, said to approximate 1,000 tons of bleached sulphite of Norwegian origin at 4.50 cents., shipments to begin next month. The bulk of demand for kraft pulp emanates from container board mills, which are very busy and which are buying about all the kraft fibre offered at between 2.75 and 3 cents. on No. 1 domestic kraft and around 2.65 cents. on Scandinavian kraft.

RAGS:—Paper-making rags continue in a rather quiet market condition. Most consumers evidently are more concerned with reducing present stocks than in augmenting their holdings at this time, and are limiting purchases almost solely to rags immediately and actually needed on current runs of paper. Prices in most instances show a downward trend, though a great many dealers who appreciate ruling conditions are not exerting undue effort to market goods at the moment. Roofing rags in New York have eased off further, sales being reported at $1 a hundred pounds for No. 1 packing and at 85 cents a hundred on No. 2 roofing f.o.b. this city. Old thirds and blues are slightly lower, with repacked blues reported offered to mills at 1.75 cents. per pound New York, and rough packing at 1.35 cents. New white shirt cuttings also are lower and in less demand. No. 1 white shirt cuttings are available at as low as 10 cents. a pound New York, fancy shirt cuttings at 5.75 cents., new unbleached muslins at 9 cents., white lawns at 8.50 to 8.75 cents., and new No. 1 washables at 4 cents.

PAPER STOCK:—After experiencing steady and rather sharp recession for a period of several weeks, prices on most grades of old paper appear to have steadied somewhat. This seems due, however, more to the fact that prices have worked down to levels where little profit is accorded packers, who have consequently reduced their production, rather than to any broadening of demand from consuming sources. Board mills are buying in fairly regular fashion but in light volume, and folded newspapers are freely available at 65 cents and less per hundred pounds f.o.b. New York, and No. 1 mixed papers at 40 cents. Old book stock is bringing no better than 1.30 cents. a pound New York, with most sales at 1.25 cents, while shavings are quoted down to 3.50 cents. on No. 1 hard white and 3 cents on No. 1 soft white shavings. Old No. 1 kraft paper is selling at 2 cents per pound f.o.b. this city, white blank news cuttings at 1.90 cents, ledger stock at 1.65 cents, and No. 1 print manilas at 1.05 cents.

OLD ROPE AND BAGGING:—Old manila rope holds steady in price and dealers report a ready outlet among paper mills at close to 5 cents per pound at shipping points for rope in No. 1 condition. Imports of old rope are increasing, yet available supplies seem only about ample to cover buyers' wants. Old bagging is in dull demand and quotably easy. No. 1 scrap bagging is offered by dealers at 90 cents. a hundred pounds and No. 1 gunny bagging at around 1.10 cents.

GERMAN PAPER DELUGE SUBSIDES.

As having a significant bearing upon the extent and character of European competition in the world's markets with Canadian and American producers of pulp and paper a statement in the current issue of "The Newspaper World," a London, England, weekly journal, published in the interests of the newspaper industry, is of interest.

"Foreign competition, in so far as it concerns German-made paper, is assuming a rather peculiar attitude," says the Newspaper World. "During the past few months quotations have been given very freely at ridiculously low prices, under-cutting everything else on the market, and if all reports are correct, orders have been as freely booked. Even the most patriotic of buyers and those most loyal to British industries could not resist the tempting offers placed before them. For instance, a line of paper, the best quotation for which from British or Scandinavian mills was 5d. per lb., has been offered by German mills at 3½d. No buyer dealing largely in this class of paper could afford to let such an opportunity slip. If he did he would soon find himself out-quoted by competitors who put business before patriotism. The orders having been booked and sent across to the mills, and the time for delivery having arrived, buyers are disappointed at finding that the goods are delayed and that comparatively little has come to hand. The German agents now say that things do not look very hopeful over in that country and that no time for delivery can be guaranteed. The sudden fall in the value of the mark is given as one of the primary causes of delayed deliveries. It is stated that food prices have rushed up to such an extent in Germany that there is great discontent amongst the workers, and though reports that come to hand say that the mills are full of orders and working full time, the export output to this country is comparatively small."

Buyers of German newsprint in the United States are said to be meeting with similar experience. German paper which was confidently expected in some quarters to break the price of American and Canadian paper to a pre-war level or below is now said to be forthcoming in quantities insufficient to affect generally market quotations.

Scandinavian paper manufacturers, recently in this country, state that American and Canadian prices announced for next year are on a scale such as it will be very difficult for Scandinavian producers to undersell and make any profit.

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OF CANADA

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EDITORIAL

THE FUTURE OF THE FORESTS.

When such a body of men as the Associated Boards of Trade of Northern Ontario come to the conclusion that reforestation is a waste of money under present conditions as regards protection from fire, we should consider that the Provincial Government has a very clear challenge and an unmistakable indication of where its duty lies in regard to forest policy. An enthusiastic forester and an ardent advocate of reforestation under proper conditions stated that to plant out trees in Northern Ontario as things are now is equivalent to feeding them to a furnace. During the discussion it was clearly pointed out that the loss to the Government in annual revenue is enormous, and the restriction on industrial development is serious, which of course means a lack of available employment for the population both in the mill and in the woods. Destruction of timber by fire is a direct, complete and irrecoverable loss of a natural resource that is Canada's capital.

The way out of the present difficulty was indicated as lying principally along three lines; in the first place, the evidence is conclusive that slash must be destroyed before it destroys the remaining timber; second, a greater proportion of the revenue from the forest must be returned in protective measures, and third, more effective means must be developed for educating the public to the value of the forest and the necessity for preventing fires from starting. The burning of slash has been advocated as a prime factor in making the forest safe and the desirability of slash disposal is admitted almost without exception by timber operators. Practically the only objection is the disadvantage that will be laid upon one group if all operators are not required to observe the same regulations. With opinion so nearly unanimous in favor of such a procedure, there is surely nothing but criminal indifference on the part of a Government which either lacks the sense or the courage to pass legislation that will adequately cover the situation and put all operators on exactly the same basis, whether they be exploiting their own lands or those belonging to the crown. The Government has just as much right to require a private operator to dispose of his slash in order to reduce the fire hazard to his neighbor as a municipality has the right to require a person to keep his premises reasonably free from fire hazard. The present season is a particularly favorable one for instituting proper disposal of logging debris. Lumbermen are working for low wages and in face of general unemployment the addition of a few more men to a logging crew would not be a great expense and would result in an all round benefit.

The amounts of money which our Provinces and Federal Government return to the forest are simply ridiculous. The people of Canada have a heritage of incalculable value in the forests and water powers, each of which supplements the other when it comes to industrial development and one is dependent upon the other for its principal value. Several of our provinces benefit enormously by stumpage dues, in fact the forest is the principal source of provincial revenue. The amount spent in improvement of the property is practically nothing and the penuriousness of our Governments in their expenditures for protection, is absurd. A person who, because a valuable house had been willed to him failed to carry any insurance upon it, would be the laughing stock of his community. Yet Canada with forests potentially worth billions, is perfectly willing to see them gradually burned up. Then when the virgin forest disappears and a little new growth comes along, fire is again permitted to start and the forest gets another set back both in years of growth and in quality of production. After being thus treated several times to indifference and contempt, even nature gets discouraged and fails to produce anything but scrub.

This brings us to what is doubtless the most important factor in the situation, namely, the education of the public to the value of the forest and its extent. Education is necessarily based on truth. At the present time the truth with regard to the forest is far from us. It is not that conditions are intentionally misrepresented, it simply means that the truth has never been discovered. When it comes to coal, iron, gold and other minerals, we find that careful investigations have been made and estimates computed. The forest is far more susceptible to accurate determination of value than any of the other sources of wealth beneath the surface of the Dominion. The only resource which can be more accurately calculated is our water powers and even these are dependent for their reliability largely upon the maintenance of an adequate forest cover on the water sheds. The introduction of the air plane and aerial photography has made available an instrument for surveying our forest areas that was hardly thought of before the war but the war clearly demonstrated the value of the air plane for surveying and mapping and the first step could thus be quickly and easily taken towards a comprehensive inventory of our forest resources. We could very soon have data from which to calculate the areas of forest land, showing the type of growth, the area in barrens, that in burns, the parts that are water and the extent of ravages by insect. Such a survey would form at least a basis for educating the public as to the extent of our forest and the immediate need for adequate protection measures. With such a start, there is no doubt but that the public would see to it that our capital is properly protected and so exploited as to bring about sane development and stable conditions.

COBWEBS.

The announcement by the International Paper Co. of their intention to accept orders at $70 for newsprint for 1922 came as a considerable surprise. Several explanations of the move have been made by people who may or may not know anything about it. We are in the latter class. It would seem, however, that there is about as much in favor of coming at once to the minimum possible price and stabilizing sales by yearly contracts as of dropping prices gradually over short periods and leaving the future more or less in doubt. Either plan to be effective should be practically unanimous or conditions are sure to be unsettled by the lack of concord. One thing seems sure; that prices are thus brought to a point where European print cannot be depended on as factor that can be used to disturb the market and discourage confidence in placing orders for future needs.

Canadian paper makers are learning how to present their products in most attractive form. Among the recent instances we should like to mention the folder showing Cloudland Covers produced by the Canadian Paper Company, and Library Blotting, produced by the Howard Smith Paper Mills. Both of these lines are comparatively new in Canada and we believe are fully equal, if not in some respects superior, to anything of the kind imported. The Pulp and Paper Magazine appreciates being advised and receiving samples of such interesting developments of the industry in this country.

A little while ago we received through the courtesy of Mr. William A. Aitken, a copy of a pamphlet entitled "Some Problems of the Paper Maker: Their Solution," this booklet contains reproductions of the patent specifications of a number of interesting developments with regard to paper machine operation for which Mr. Aitken is responsible. Many of our readers will recall the visit of Mr Aitken to this country some months ago.

Three men were discharged recently by a Canadian mill for playing tricks on the Watchman. It was a good lesson. Respect for law and order is a mark of civilization; willing respect and voluntary cooperation will go a long way toward making the officer of the law a friend and a guide and make property and happiness more secure.

There is some satisfaction in knowing that our prognostications of the election were not wrong—we didn't make any.

It now remains to be seen how generous the Liberals are.

Wonder if Parliament is Gouin to be led by a King.

MILL STOCKS DECLINED IN OCTOBER.

Comparing the stocks on hand at the domestic mills on October 31, with their average daily production based upon the combined production for 1918, 1919 and 1920, the figures of the Federal Trade Commission show that:—

Newsprint paper mill stocks equal 5 days' average output.

Rock paper mill stocks equal 10 days' average output.

Paper board mill stocks equal 8 days' average output.

Wrapping paper mill stocks equal 1 days' average output.

Bag paper mill stocks equal about 6 days' average output.

Fine paper mill stocks equal 28 days' average output.

Tissue paper mill stocks equal 13 days' average output.

Hanging paper mill stocks equal 32 days' average output.

Felts and building paper mill stocks equal 6 days' average output.

Miscellaneous paper mill stocks equal 23 days' average output.

Total paper mill stocks of all grades equal about 11 days' average output.

Comparing the stocks on hand at the domestic pulp mills at the end of the month, with their average daily production based on the reports covering the years 1917, 1918, 1919 and 1920, the figures show that:—

Ground woodpulp stocks equal 25 days' average output.

News grade sulphite mill stocks equal 9 days' average output.

Bleached sulphite mill stocks equal 3 days' average output.

Easy bleaching sulphite mill stocks equal 3 days' average output.

Mitscherlich sulphite mill stocks equal 4 days' average output.

Sulphate mill stocks epual 14 days' average output.

Soda pulp mill stocks equal 5 days' average output.

Mill stocks of "other than woodpulp" equal less than 1 day's average output.

Total mill stocks of all grades equal 14 days' average output.

Total stocks of all grades of pulp in the mills on October 31 amounted to 161,837 tons. All mill stocks decreased during the month.

The Superintendent and Cost Department*

By ED. T. A. COUGHLIN.
(Superintendent, Coating Div., Monarch Paper Co.)

I wish to say that it is with a great feeling of hesitancy that I am addressing you this morning as the representative of the American Pulp and Paper Mill Superintendents' Association to speak upon the important subject of "Co-operation Between Our Associations." I wish I had the time and oratory to suitably express the many reasons why a close co-operation should prevail between the superintendents and the cost department in every mill.

Last Monday evening I was one of the many eager listeners who had the pleasure of hearing your very worthy president, S. L. Bush, speak in Kalamazoo. I told Mr. Bush that I had come to hear him speak because I wished to obtain some pointers regarding what you would like me to say to you today. Mr. Bush replied that the things that would please you most would be as "empty mouthings" and that I should come out flat-footed and "spill the beans." Nevertheless, I gained an idea from his talk that impressed me very forcibly. He stated that one of the fundamentals of a cost system that was not generally recognized was its "dual purpose," namely, not only to arrive at a cost and selling price, but also to serve to direct, inform, control and guide the superintendent in the hundred-and-one details that daily require his supervision. I can readily understand from that statement the amount of help such a system would be to a superintendent.

Need of Proper Co-operation.

Cost systems have proven failures in some mills through various causes, but it appears to me that they will all fail to function properly unless there is proper co-operation between the superintendent and the cost department. To my mind the cost accountant should be a real diplomat to be able to put over his ideas to a hard-headed practical "super" who thinks such stuff is a "bunch of bunk" and that "liars will figure." However, this class of superintendent is in the very small minority at the present day. Most of the men that I am acquainted with are working heart and soul for the success of their mill and they thoroughly believe in cost systems, but naturally they are suspicious about things of which they know nothing.

There should be a complete understanding of the relative value of every daily report. The importance of correct records should be impressed upon the superintendent and he should be made to feel that upon himself rests the successful completion of the cost statements. This can all be brought about by the cost accountant by the use of diplomacy and salesmanship.

It has been my fortunate experience to be connected with a mill that has a very complete cost system and I know something of the hardships that were endured and of the difficulties which had to be overcome before it was possible to obtain accurate records and cost figures. In the first place the cost department did not have the proper backing of the manager or the superintendent. Daily records were tabulated which were known to be incorrect because the men in the mill had not been properly instructed regarding them or made to realize that everyone would be held responsible for the success of the system. By degrees, however, these troublesome factors were eliminated so that the cost system now works like a well-oiled machine. I think that the time wasted accomplishing this end could have been largely avoided by the right kind of salesmanship on the part of the men who installed the cost system.

A Reminder of Work Well Done.

To my mind a cost system is only "firing on a few cylinders" when it is content with the routine compiling of costs for office use only. To get all the real good out of the earnest effort put forth by the men in the mill in making correct figures available, they should be rewarded for their endeavors by some reminder that will show them that their work has been well done, or where they may further improve it. This can be accomplished very successfully by the posting of their totals, either graphically on some of the standard charts or by the preparing of a "batting average" in percentages. There is nothing more appealing to a workman who is conscientiously doing his daily duties than to gaze at this daily sheet and see the pleasing result. I know this to be a fact for I have tried it out. It stimulates production, reduces shrinkage, saves time and materially lightens the duties of the superintendent. Another important consideration is the opportunity it gives the superintendent to weed out the "dead wood" among the men.

We are planning our speakers for the Michigan Division Superintendents' meetings for the coming year, and it is my earnest desire that we may be able to locate convincing speakers on costs graphically illustrated. It is quite useless for a cost man to speak before a superintendents' meeting with his usual flow of technical phrases, but let him show charts or graphs of production, lost time, direct labor hours, comparative units of work, consumption of materials, distribution of power, shrinkage, avoidable waste, departmental expenses, etc., and he will find the superintendents intensely interested in what he has to say. The story can be told in a few simple words and with a great deal of understanding. I think that if a cost system is explained in this manner, the facts and figures will tend to make a very real appeal to the practical superintendent who is not so well versed in bookkeeping and accounting terms.

Several Kinds of Cost Systems.

There are several kinds of cost systems, which can be classified as complete, partial, and indifferent. A complete cost system is a priceless institution in any industry. A partial system is a source of endless trouble between the different departments, and in time will disrupt any organization, regardless of how competent the departmental heads may be. An indifferent system is even more of a menace than a partial one, for unless the accountants have the confidence and encouragement of the management, they will in time become discouraged, and it is in these mills that we hear it said: "Oh yes, we have a cost system, because our competitors have one, but we don't pay much attention to it in selling our products."

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*Address given at the Drake Hotel, Chicago, October 6, 1921, at the Sixth Semi-Annual Convention of the Cost Association of the Paper Industry.

The paper mill chemist, together with the cost accountant, are the best friends any superintendent can have in the mill. He should realize their importance, accept their findings, and apply them in operating his department. The chemist's tests on raw materials enable the superintendent and accountant to arrive at the exact amount of the different materials that enter into the furnish of each beater. In this way a uniform product for each grade may be manufactured whenever required. The completed cost should be tabulated according to grades and weights, and variations from the normal cost should be brought to the immediate attention of the superintendent, thereby giving him an opportunity to investigate and take steps to remedy the fault, whatever it may be.

Must Be Based on Golden Rule.

Co-operation must be based on the Golden Rule, which unfortunately is a much abused saying. We use it unwittingly and lose sight of the splendid purpose it should convey. I cannot help recalling some chance remarks made by superintendents and cost men. One said, "He don't know anything about costs—his records are no good—his production is below normal—his material consumptions don't gibe, etc.—he's no good 'super.' " The other remarked, "It's a poor system—he don't know how to base costs—where did he learn that stuff?—he makes mistakes and then tells the boss I'm to blame." That was a fine co-operative spirit, wasn't it? How much better it would be if only these ideas could be eliminated and a feeling of confidence inspired in their place, so that some real progress might be made. Without the firm foundation of mutual trust and agreement all cost systems will go the way of the proverbial snowball. Let's get down to brass tacks and smooth out these flaws which we attribute to each other, and eventually the cost system will undoubtedly produce results beneficial to all of us. "Knocking" one another is a bygone pastime in real business. There is not one in this intelligent assembly today who can consider himself the perfect man from the point of view that he knows all that there is to know regarding costs. We are all prone to make mistakes, and faults can be found in each of us, if only the search is thorough enough. Why not admit these facts in a sane manner and lend our ears to the helpful hints and explanations, advice and counsel that we may be able to give kindly to each other?

Studies for Later Reports

The American Pulp and Paper Mill Superintendents' Association welcomes with joy the work your able committee on beater furnish has in hand. We will await with interest this committee's report, and you can rest assured we will do what we can to further the work to the best of our ability. We have several standing committees whose opinions you may feel free to call upon at any time. These committees consist of men, expert paper-makers everyone of them, who are making studies for later reports on such subjects as "Preparation of Halfstuff," "Ground Wood," "Sulphite and Soda Pulp," "Coated Paper," "Beater Room," "Machine Room," "Power and Water Supply and Purification" and "Safety First."

Any findings of your committee will prove of inestimable value to our membership and it will be our aim to spread such information over the records of our year book and other publicity journals. This kind of work, we believe, represents the true co-operative spirit that will be a benefit to the entire paper industry. Such work that tends to advance the art and science of the industry will be recognized by the mills not in your association at present, as well as by superintendents not now members of our organization, and it will be another added reason why they should join us.

There is nothing further, gentlemen, that comes to my mind except possibly to again suggest that on your return to your respective mills you should all endeavor to get better acquainted with your superintendent, chemist and departmental heads. Learn to know them sincerely and try to show them that you are one of their best friends in the mill and are really working for their interest, and in a short time they will open up their hearts to you on any subject. By developing this spirit of co-operation we unconsciously help one another and the results will, I know, be gratifying to the mill management, as well as to the individual.

ESSENTIALS OF FOREST POLICY.

In his remarks at the last meeting of the Northern Ontario Associated Boards of Trade, Mr. E. J. Zavitz said there was great need of a stock taking in regard to our forests, so we would know exactly what our resources are. Work on this had been started in the west by hydroplane and next year this district would be recovered.

Along Lake Erie in the nursery there were eight million seedlings. These had been mainly used in holding of sand dunes and covering of cut over lands. Reforestation in the North was difficult. No one would advocate planting out trees until the fire problem had been solved. It was planned to have demonstration areas to find trees suitable to all areas and this took a long time. It was not fair to compare Canada to Europe. In the latter fire hazard was small, in Canada great and different methods were therefore necessary.

There were three phases here:—

1. Protection of the pulpwood areas. In this there would be little difficulty if we could get the money. As long as slash was left on the ground fires would occur.

2. Protection of towns and settlements by fire zones.

3. Protection of agricultural settlements. The bulk of opinion was in favor of the continuation of the fire permits system. The big thing was education, for the bulk of fires was due to negligence.

The whole question came down to one of money. In Sweden 50 per cent. of revenue went back into forests. In Canada $500,000 had to protect 100,000,000 acres.

AUSTRALIA'S PAPER IMPORTS.

(From the Weekly Bulletin

	1919-20	1920-21	Increase
Paper:—	£	£	£
Cardboard, etc. ..	157,436	389,265	231,829
Printing	1,422,463	3,876,848	2,453,885
Wrapping	299,102	688,007	388,905
Writing and Typing	435,497	995,109	559,612
Other	535,699	1,126,800	591,101

Problems of the Sulphate Pulp Industry

Removal of Odors from Digester Blow in Sulphate Mills.

By GUSTAF F. ENDERLEIN.

Nekoosa-Edwards Paper Company Port Edwards, Wis.

The two articles in the last and current issues on the subject of Problems of the Sulphate Pulp Industry are contributed by members of the Sulphate Pulp Committee of the Technical Association of the Pulp and Paper Industry. The farmer and the resident of a town in the vicinity of a sulphate mill will appreciate the efforts of this committee. Such work is typical of the activities of our technical societies. It is the willing service and cooperation of such committeemen that is the foundation of the success of our industry.—Ed.

The problem of removing the disagreeable odors from the sulphate mill has been taken up from time to time, but a practical solution seems yet to be wanting, and undoubtedly much work and time will be necessary before a way is found that will work out satisfactorily and economically. The most difficult part of the problem is the removal of the odors from the furnace gases on account of their dilution and large volume. The removal of the odor from the digester blow is more inside of the possible with apparatus that is easy and relatively cheap to construct.

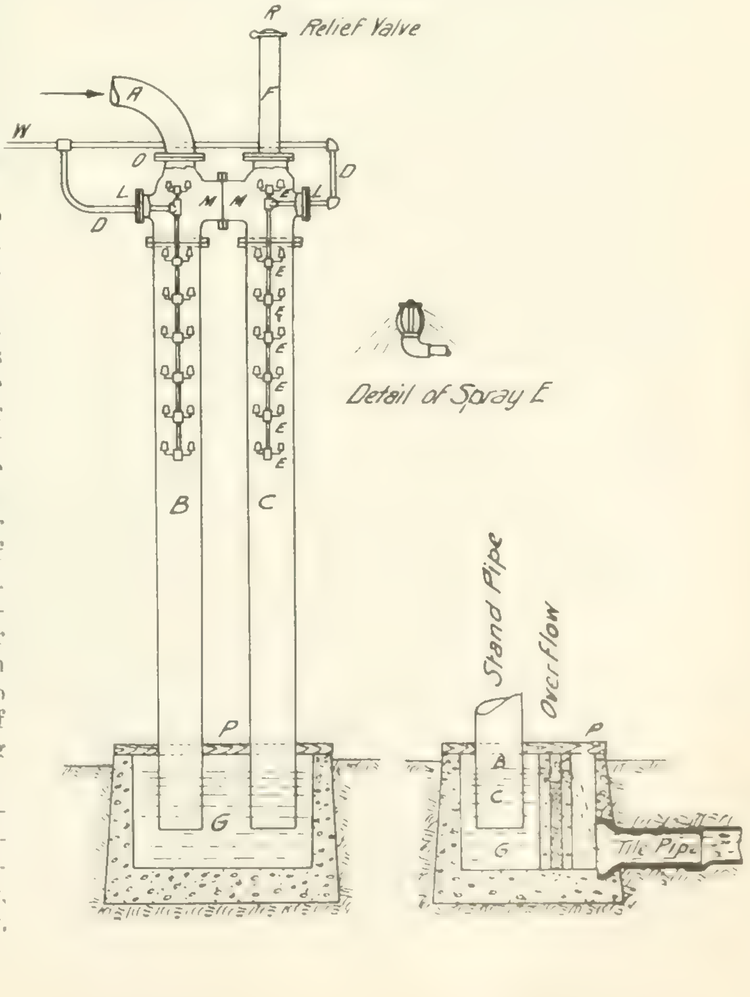
When a sulphate digester is blown, a certain amount of disagreeable odors from sulphide compounds will be relieved with the steam, and thrown out in the atmosphere. As these vapors usually are relieved on a relatively low level and have no chance to spread out in the atmosphere like the gases from a smoke stack, the odors will make themselves known at once and rather strongly, to the discomfort of the people living in the neighborhood. If this relief could be kept inside of a pipe or any other inclosure and not let out in the atmosphere, the odor would, of course, be eliminated. In blowing a digester a large amount of steam is relieved, as the digester usually is blown at a relatively high pressure, and to be able to keep this relief from going out in the atmosphere, every part of it has to be condensed. In some mills the relief from the blow is used to heat up wash water and in this way part of it is condensed, but the odors going off into the atmosphere apparently are as strong as before, as only a minute part of the odors is dissolved in the condensate. These condensers or heaters used are tube condensers or outside condensers. Cooling water and condensate are kept separate. This is of advantage when using the water for feedwater or for a similar purpose, but for reasons mentioned below, it is more of an obstacle than a help in the elimination of odors from the vapor.

To condense completely the relief from the digester blow with an outside condenser, a large amount of tubes would have to be used to give enough surface, and a large amount of cooling water have to be supplied, as the whole amount of vapor from the digester has to be condensed in the short time of ten to fifteen minutes. A prolonged blow-time would cause the pulp to hang up in the digester, which also would happen if the pressure in the digester were low at the beginning of the blow.

In the method described below the idea of the barometric condenser was made use of, instead of the outside condenser, in order to take care of all of the relief and produce a complete condensation of all vapor, and still not have to use an excess of cooling water. The barometric condenser has, as known, a spray in the top of a standpipe, vapor coming in at the top. As soon as the vapors come in contact with the spray they are condensed and a vacuum is created. The vapors and cooling water, going in same direction, are thus in direct contact with each other. To further the dividing of the cooling water in the standpipe, not only one spray, in the ordinary barometric condenser, was used, but a series of sprays, making, so to say, a series of condensers in one. In this case the cooling water is thoroughly mixed with the vapor which has to go through a very heavy mist. This is one of the main factors to eliminate the odors. As known, the ordinary water contains quite a considerable amount of air, which also will be mixed with the gases and, here is the point: by oxidizing the sulphide in largest degree will eliminate the odors. This will not be the case in an outside condenser, as here the water from the condensate, which is the only water that may eliminate some of the odors by dissolving, is the only water that comes in contact with the relief, and it does not contain any air and therefore no oxygen for oxidation of the sulphides.

In line with above ideas, a condenser was constructed and put in active service and found to work satisfactorily. It condensed practically all vapor relieved from the digester blow.

A reference to the accompanying sketch will make the construction and working of this condenser clear.



The relief gases from the saveall room are led through pipe "A" to the condenser, connected to the top at "C" to one of the two standpipes. The two standpipes used in this case are about 24″ in diameter and were decided on as more convenient than one higher and wider. They are connected above by two crosses. The top opening on one is, as mentioned above, connected to the pipe "A" and the top opening of the other is connected to a 5″ relief pipe "F" with a safety valve "R". Side-openings "M" are connected together, allowing the steam from relief line "A" to be divided up into the two standpipes "B" and "C". Opposite are the intakes "L" used for pipe lines for the cooling water. To the bottom openings of the crosses the standpipes "B" and "C" are connected. "W" is a 4″ water line dividing into two 3″ lines "D," one for each standpipe, entering the cross at "L" and supplying the water for the sprays "E". These sprays are arranged in pairs, the first pair being in the cross of the standpipe and the next one below the flange. The following pairs are about 24″ apart. (They may be so disposed that one spray is not exactly over the others.—Ed.) The opening for the cooling water in the sprays is about ½″ and tapered, through which it shoots up against a baffle plate which in turn is deflecting it downwards, as shown on detail sketch. The pressure in the water line is about 40 lbs. and the spray delivers the water with a good force. The water is also deflected from the sides of the standpipe and so making a very heavy mist along the entire length of the spraypipe and also below. The lower ends of the standpipes are submerged in a well "G", made of concrete, covered with a wooden top "P". The well "G" has a loose partition wall "K," by which the water level in the well may be raised so as to seal the outlet of the standpipes. The water flowing over the dam is taken care of by the tile-pipe "J" and may be directed to any place desired.

Just before the blow starts the feed valve for the cooling water on the 4″ line is opened and the sprays put into action. At the time the blow starts, there is formed a back pressure, as the relief line from saveall in the diffuser room is directly connected to the condenser, which is water sealed at the bottom. At this moment, safety-valve "R" on relief pipe "F" starts to act and opens up, but as soon as the full steam is coming over it is condensed by the water spray and a vacuum is formed. As soon as the pressure disappears, the valve "R" closes up and no gas can escape there to the atmosphere. This valve may be of the simplest construction. A hinged top of wood with a piece of belting nailed on the underside answers the purpose. The water coming out at the well is very warm and could be used for washing or other purposes, as no smell can be detected at the well. This seems to prove the theory of the oxidation of the sulphides and that the disappearing of the odors is more an oxidation and less dissolving of the odors in the water.

PROVINCE WILL CUT PULPWOOD.

St. John's, Nfld., Dec. 5.—To relieve unemployment the Newfoundland Government has decided to again let contracts for cutting pulpwood on the Crown lands during the winter. The Government has still on its hands a considerable portion of pulpwood cut last winter, but it has hopes of making an agreement with the Harmsworth Pulp Mills to take a large quantity of wood.

PAPER MULCH PRODUCES MORE PINEAPPLES.

The system of paper mulching evolved by C. F. Eckart, former manager of Olaa plantation, Hawaii, for increasing sugar production, and patented, has been applied to the growth of pineapples and is revolutionizing that industry, according to a statement made by the Hawaiian Pineapple Company.

A roll of paper is laid out on the ground and rows of pines are planted through holes in the paper. The process is simple and the company claims the paper prevents all weed growth adjacent to the plants, saving much labor and leaving the cultivators free to pass between the rows. It avoids the necessity of hoeing the plants, saves the leaves and roots of the plant from being broken or bruised, protects and shades the ground, preventing its becoming baked or washed away, prevents evaporation, keeping the ground about the plants moist, giving the roots good feeding ground, absorbs the sun's heat, gradually transmitting it to the earth, keeping the ground warmer, especially in the night during cold weather.

Three Tons Increase.

J. L. Whitmore, acting manager of the Hawaiian Pineapple Company said experiments on their plantation had increased the production more than three tons to the acre.

Mr. Whitmore announced that the company had an option on the patents for their use in pineapple culture in the islands and that he considered it almost certain that the company will exercise the option. They may sub-license to their competitors as a part of their policy.

The Eckart system of paper mulching has been in operation for nearly three years on the Olaa plantation where the idea originated and was worked out to its present successful operation. All the cane grown on the Olaa plantation is fostered by this system. The paper is manufactured from the bagasse of the cane. Large paper mills are in operation at Olaa where tons of the pulp paper are made every hour.

The system used in cane mulching differs from that described in the Honolulu dispatch for pines. The paper is spread over the rows of cane after it is planted and the sharp pointed cane sprouts pierce the paper sheets, much as a pointed lead pencil is easily forced through a heavy sheet of brown paper.

Patent on Weights.

The labour saved by the Eckart patents is said to be fully fifty per cent. The increased yield in cane is about the same as that described for pines.

A curious thing about this process is that the patent is not on the manufacture of the paper or on anything more than the simple process of weighting the strips of paper to the earth with any small obstacle, a stone or chunk of lava being generally used. The idea of holding the paper to the rows until it has been pierced by the plants is the simplest idea which is likely to revolutionize all growing plants and enrich Mr. Eckart into the Henry Ford class.

In the pineapple cultivation the sturdy young plant serves as the weight as well, a hole being thrust through the paper stretched along the rows and the root of the plant stuck through the orfice into the soil. In this way Mr. Eckart kills two birds without one stone.

Note:—Samples of papers for mulching pineapple and sugar cane can be seen at the Fruit Products Laboratory in Montreal.

Variables in the Cooking of Sulphite Pulp

By BENJAMIN T. LARRABEE, Cumberland
Mills, Me.

It is well known that the cooking of sulphite pulp involves a number of problems of a variable nature, and that there are almost as many methods of cooking sulphite pulp as there are mills using the process. Different grades of paper require the manufacture of as many different grades of sulphite pulp, and each of these processes must be conducted in a manner to produce a grade of pulp that will be desirable for the particular kind of paper to be manufactured.

The fundamental principles of cooking are practically the same in all mills, but it is in connection with the numerous details during cooking that we find wide variations in operation. For example, one mill insists on the use of an acid that tests 6 per cent. free SO_2, another being satisfied with a 4 per cent. free SO_2. Some other mill may want 1.2 per cent. SO_2 combined, while another mill may hold that .9 to 1 per cent. SO_2 gives the best results. Some mill superintendents believe strongly in a side relief, while another superintendent will refuse to use it. There are differences of opinion as to the proper amount of pressure to use and to what maximum temperature the cook ought to be brought. Some mills start to reduce the pressure on a digester at a certain stage in the cook, while others do not.

When is a Cook Completed?

I shall mention what seems to me one of the most critical problems in connection with cooking that we face, and one which involved a serious difference of opinion among sulphite engineers, and that is the determination of the complete cook.

Different methods are used in different mills to determine the blowing point of digester. Those most commonly used are color, which consists of either just simply holding a sample of the acid drawn in a glass before a light or making a comparison with a standard color; smell; testing volumetrically with a standard solution of iodine, using a starch indicator; or by drawing off a sample of stock from the digester periodically, washing it, and noting the action of bleach on it. All of these methods are in use in various mills, and each one has its ardent followers who believe that the particular method in use by them is the right one.

There are still other variables that have a more or less important bearing upon the cooking of sulphite pulp. There is the manner in which the steam enters the digester. Some mills use only one inlet for steam, usually directly at the bottom, while others use several inlets located in favorable positions so as to insure complete and thorough circulation. There are two methods of filling a digester with acid—through the top and pumping into the bottom.

Continuing Digesting After Relieving.

After a digester is brought to pressure there are several different ways observed in the operation of handling them. In one mill that I visited, as soon as a digester is at pressure the "cold gas" is relieved and the digester is then shut in for an hour, following which the relief valves are again opened and then the cook proceeded with. On inquiring why this method was used, I was told by experimentation it was found that a much better grade of pulp was produced by this method of operating. The theory as explained to me was that by shutting the digester in for an hour at that particular stage of the cook, the action of the acid at a high strength was responsible for an improvement in the grade of the pulp.

More or Less Important Variables.

It is a well known fact that the variation in moisture in the wood and the kind of wood are almost unavoidable variables which have an important bearing on the cooking of sulphite, as does also the size and uniformity of the chips. Many sulphite superintendents may wonder why I have made special mention of the foregoing variables encountered in the cooking of sulphite pulp, for to them it is a review of facts with which they are familiar. My reason for bringing them up for consideration at this time is connected with my desire to induce superintendents to get together, exchange ideas, and study carefully all problems connected with the cooking of sulphite pulp, and so lead to the standardization of the cook.

Superintendents of sulphite mills producing pulp for book paper might adopt one standard, and those producing pulp for newsprint another, and so on, according to requirements. By getting together in this manner I should expect to see most of these variations in the operation of sulphite plants reduced to a minimum, and with a consequent increase in efficiency of operation which would eventually result in the production of a better grade of pulp.

Thus far much of what I have presented has been criticism of a destructive rather than a constructive kind. With your permission I shall outline some features of operation that have a direct bearing upon the cooking of sulphite pulp used for the manufacture of book paper.

Wood Should Be Uniformly Moist.

Ordinarily the wood as received is a mixture of spruce and fir, with a varying proportion of hemlock. This wood should go to the wood room in a uniform state so far as moisture is concerned. Usually as the wood is received there is a large variation in moisture; it should be piled in the yard and allowed to season and dry out in a uniform state of moisture and be delivered to the wood room in this condition. Wood of uniform moisture would aid greatly in the production of uniform pulp. Uniform wet wood would produce equally as uniform a pulp, though dry wood would be preferable from the standpoint of strength of acid and consumption of chemicals.

If any hemlock is present it should be piled at one side, and when enough has accumulated to warrant its use it should be used by itself. This would ensure a more uniform product, for it is a known fact that hemlock should be cooked differently from fir and spruce.

Points Worth Considering.

Among minor items yet highly important, I may mention my belief that for cooking a ⅝-inch chip is desirable, and that extreme care should be taken with

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[*] Read at New York meeting of the American Pulp and Paper Mill Superintendent's Association, July 4, 1921.

chipper knives, bed knives, chipper screens, etc., to produce as uniform a chip as possible.

Pumping the acid into the digester through the bottom has a tendency to prevent the chips from settling, and thereby brings about more complete circulation in the digester, which tends to a more uniform pulp.

I believe that a good standard strength of acid should be 6 per cent. total, 49 per cent. free, and 1.1 per cent. combined. A combined of this strength insures the use of a minimum amount of bleach, and is high enough to guard against any irregularity in the operation of the acid plant, such as a shut down or running into a bad lot of lime. It is a well known fact that when you drop the combined below .9 per cent. SO_2, you are treading on dangerous ground; the quality of the pulp is bound to be inferior and the digesters will not respond as with a stronger acid.

I believe that the steam pressure at the boilers ought to be about 150lb pressure and delivered through as small a pipe as is practicable, thereby insuring steam with a minimum amount of water. On some types of digesters there is perhaps nothing gained by having the steam enter through a number of nozzles distributed properly, but such an arrangement is desirable for the reason that complete circulation is a vital step in producing a uniform pulp.

The pressure used and the time taken to come to pressure depends upon the moisture in the wood and the kind of wood. There is certain maximum temperature which both from a commercial and economic standpoint should not be exceeded in cooking, having consideration for yield and strength of pulp; yet 300° Fahr. should not be exceeded and 290° Fahr. would be a desirable maximum.

In determining the completion of a cook it has been my experience that the color indication is indispensable; also the volumetric test with a standard solution of iodine; a combination of the two should be used to determine the blowing time.

At the beginning of this paper I endeavored to impress upon your minds some of the variables we are now facing in the cooking of sulphite pulp; next I gave you my reason for doing so and brought out the fact that superintendents should adopt standards for the cooking of sulphite pulp as well as for the other processes connected with a sulphite mill. Following this I have given my views on the cooking of sulphite pulp used for book papers, attempting to present to you conditions which, according to my knowledge of the process, are ideal.

THINK TWICE.

There recently appeared in one of our leading newspapers an article entitled "Think Twice." Under present conditions this is a mighty good motto to remember.

During the past few years Canada has been privileged to enjoy what she has never experienced before —unlimited and unbounded prosperity. The pot of gold laid at our door has been open for every one to help himself, and now the question arises, "Has it been beneficial or detrimental?" Some have profited by it financially and laid by a dollar, others have formed extravagant habits and gone into debt for many dispensable luxuries, not realizing that sooner or later the bubble must burst, and what then? not only have many allowed themselves to be misled from a pecuniary point of view, but there has been created within us a tremendous spirit of indifference. The shortage of help has forced the employer to cater to the whims and fancies of impulsive men, with a spirit that some time they would get even. If we look over the situation carefully we find two elements among the laboring class; one that has "thought twice" and the other which thought only once. It is to the latter that these few words should apply.

It was all very easy, when help was scarce, for a workman to go to the boss and say, "I want more pay; I won't do this or that," also, to stay away, and work when he pleased, etc. There was only one course for the boss to take, and that was to swallow it. But did the boss forget the men who had been true and dependable and stood by him and the concern? The answer is very easy. The first men to be let go were those who had been the most drastic in their demands, and simply because they did not "think twice."

Here is one case (which, by the way, is only one of thousands) where an employee formed a concern to pay far beyond his value. When the reaction came he was asked to make a concession, but his inability to "think twice" proved his Waterloo. The result was that after throwing up his job rather than submit to a just request, he had the pleasure of walking the streets, finally advertising "rooms to rent," that he might have a place to lay his head.

Notwithstanding that the tide has turned and the employer is in the position the employee has been for the last few years, both he and the rest of his administrative force have no right to be overbearing, and although they may have the inclination and power as men, they should "think twice." Many good men, although they have gotten in bad with the foreman, are not wholly to blame for their actions. No one knows but themselves what their true inclination was, but perhaps they could not act accordingly, owing to fear or acts of others. Such men are entitled to just consideration. I have found, as a rule, that a personal interview with such men has placed matters in an entirely different light, and what was apparently a radical and dissatisfied man was changed to a good one. This not only saved his job, but the concern is better off by having retained an experienced person.

The present is no time to create dissension, as it comes easily enough without, but it is the moment for clear thinking. We all have one right, whether employer or employe, and as a duty we owe to each other, before we take too long a step let us all "think twice" and be sure that we not only think straight but that we see and hear straight as well.—The Pulp Press.

DIRECTORY COVERS ALL NATIONS.

For paper makers and others who have occasion to deal with the industry in foreign countries, the Paper Makers Directory of All Nations, published by Dean & Son, 160a Fleet St., London, E.C. will be of the greatest assistance. The thirteenth annual edition contains 950 pages and is quoted at 21s. net. For the first time since the commencement of the war in 1914, it has been possible to completely and accurately revise German and Austria data. From the frequent references that the editor makes to this volume we can heartily recommend it to those engaged in paper and allied trades at home and abroad.

British Trade News

(From Our London Correspondent).

London, Nov. 25, 1921.

CANADIAN CHAMBER OF COMMERCE.

I have been in communication with the Secretary of the Canadian Chamber of Commerce in London, and for the information of pulp and paper men I should mention that the President is Sir George McLaren Brown, European General Manager of C.P.R.; vice-presidents, Mr. H. B. Robinson, Assistant European Manager of Massey Harris, Ltd., Lieut.-Col. W. Grant Borden, Canada Steamship Lines, Ltd.; members of council, Agent Generals for British Columbia, Nova Scotia, Ontario, Quebec, the Trade Commissioners for Canada in London, Manchester, Liverpool, Bristol and Glasgow (who are all ex-officio), Lord Beaverbrook, W. S. Hodge, (Hodge Sheriff Paper Co. Ltd.), P. Hurd, "Canadian Gazette," Walter Lefroy, Canadian Newspaper Co., R. S. Ward, The Beaverboard Co. Ltd., and several others representing steel, railways, sheet metal, flour, etc. The Chamber has a finance committee, commerce and trade committee, laws and arbitration committee, transportation, post and telegraph committee, publication and press committee, and a rooms and library committee. Mr. Hodge is on the commerce and trade committee along with Mr. Ward, while the laws and arbitration committee has the help of Mr. F. C. Wade, K.C., the Agent-General for British Columbia. The Chamber should be an extremely useful body in the United Kingdom. There is plenty of work for it and plenty of wrongs that want putting right by it. The chamber must be a live body, full of vim—and out for Canada. Mr. R. B. Stewart, the Secretary has expressed his thanks to the "Pulp and Paper Magazine," for the interest already taken in the chamber and its objects.

Technical Section.

The British Technical Section meets early next month in Manchester. To be precise it is really the Manchester Division of the Technical Section. A very enjoyable programme is being arranged and Mr. W. C. Whittaker, of Bury, Lancashire, will speak on "Suggested Improvements in the Design of Papermaking Machinery"—a subject which should be of great interest to Canadians. Mr. Nuttall's paper on "Developments on Papermaking from the Engineering Point of View," will be further discussed, to be followed by an informal talk on " Strainers and Their Difficulties" and "Vacuum Boxes." During the meeting a demonstration of the Davon Microscope will be given by Mr. T. R. Wollaston. As a kick-off to the proceedings tea will be served in the Midland Hotel. I mention this program of the Manchester Division to give Canadians some indication and an "inkling" of how the British Technical Section runs the divisional gatherings. They are interesting and instructive, I am glad to say, and members of the paper and pulp trades are becoming impressed with their importance.

The British Trade Ship.

In regard to the British Trade Ship which is to make a tour of the world I learn that provisional tenders are being obtained by the builders of the ship for the various parts and fittings. The vessel will be called "British Industry" when built and provision is being made for space for textiles, paper, machinery and other goods which must be of the highest quality produced in the United Kingdom so that an impression will be made on buyers in the markets of foreign countries, as well as Colonial and Dominion. By this means it is hoped to build up and revive the pre-war export trade.

Anti-Noise Day.

Professor Henry Spooner has been lecturing this week in industrial circles on noise and fatigue and says that attention should be concentrated on avoidable noise. He advocates a rest day away from the noise of the machinery in the mill, which causes industrial fatigue. Workers become deaf before they reach the age of forty years in many cases, and his remedy is to supply ear stoppers and rubber for flooring, stairs, etc. The tyranny of noise, adds the Professor, materially affects workers in their production, particularly where there is high speed machinery.

Papermakers' Samples.

The papermakers of the United Kingdom have heretofore had a system of posting samples of their various makes of papers to printers, publishers, and other likely users of paper at home and abroad. By this means the name of the mill was kept and brought before prospective buyers and in many cases the samples are neatly got up so as to make them attractive looking. After the samples are sent out the salesmen go on their rounds to look for business. The Post Office has now stepped in and says the samples cannot be sent at a cheap rate, same as printed matter, and the subject has been introduced into the House of Commons by Major Wood, who has asked the Postmaster General "whether he is aware that Post Offices have refused to allow papermakers circulars to be sent at the special printed paper rates, because the circulars had printed on them 'this is a sample of our paper,' and whether he could see his way to order that such circulars were not to be treated as samples."

The Postmaster General replied that he was aware of the facts stated. Samples were not admissable at the printed rate and he could not hold that the patterns, which were described by the senders as samples were not such, nor could he alter the regulations to admit samples of paper. This means that full rates will have to be paid on samples in future—another increase in the papermakers' office expenses.

Safe Guarding Industries Act.

From enquiries I have been making recently there appears to be no one taking advantage of the Safe-Guarding Industries Act as regards paper. I am, however, open to correction. It is admitted that the importation of foreign paper into the United Kingdom is seriously affecting the sale of British, Canadian, and Newfoundland products. In the case of Finland the mills are producing paper under cost price for England. It is openly admitted they are doing so with their depreciated rate of exchange and the Finnish sellers are energetic in the British market, with a product that it would hardly pay a British mill to produce for even the sake of running machinery in order to keep it oiled. What is true of the British market is true of the U.S.A. market. To make matters worse, some of the British mills cannot find employment for their workers, orders are so scarce, yet the Finnish mills are well occupied producing paper on which they are making no profit and dumping it into the stores of the British agents. Knowing these facts, it is strange that British papermakers have not made a case for the Board of Trade under the Safe Guarding Industries Act which has been specially introduced for them and for their protection. Let Canadians con sider what the position is like. Supposing the British mills turned their attention to producing paper for the sake of running machinery and shipped it to the Dominion and sold it at a price less than the Canadian mills could produce, would there be an outcry against such procedure or such an undercutting scheme—particularly if there was an Act to safeguard the producers of Canada? That is the position in England to-day. And we are told to "keep smiling"—the crisis will soon be over.

"British Paper For British Users."

Capt. Nuttall in a paper read sometime ago to the paper bag makers and the wholesale stationers said: "With prices on paper coming from countries where the exchange is depreciated, it is, of course, impossible to compete, or even to attempt such a course. We are endeavouring to deal with that problem by quite other methods, viz: the Safe-Guarding of Industries Act, and we feel sure we can count on your assistance in this respect if need be." Capt. Nuttall has got printed evidence in London to-day to stop Finland's game of tricks in the British market and there is no use of preaching "British paper for British users" until the British papermakers' by combined action and with the resources at their elbows, take up the foreign paper imports and convince the Board of Trade, with a good case, into some tangible line of action. Deeds are wanted, not words, and there is no use of adopting a policy of "Wait and See" with British mills running short time and British workers standing idle, while Finnish and German paper is cuttig the ground beneath them.

The Slump.

Capt. Nuttall has summarised the position in a nutshell in his paper. He says: When the slump came it is well-know that there was in existence tremendous stocks of all classes of wrapping and bag papers, much of it bought speculatively. Our papermakers waited patiently for those stocks to be liquidated, hoping that when they were gone, business would improve. The stocks have been largely cleared; but the improvement has not materialized. The process of clearing brought about that demoralisation in the market which was afterwards continued by the depreciated exchanges of late enemy and neutral countries. The papermaker, himself, held heavy stocks of high-priced material when the slump set in. He has in the meantime written these down in his books at ruinous loss. To-day he is fighting for business which he cannot get, although he has brought down his prices to the level of his Scandinavian competitors in most cases. It is most important also to remember that these prices entail very heavy losses, even when based on the current market prices for materials. Nevertheless, the British papermaker is prepared to suffer these losses if only he can get his plant going and keep his workpeople together. Another point to be borne in mind is that diminished output means increased cost per ton, so that the very circumstances which the papermaker is trying to overcome, namely, shortage of orders, adds to his cost of manufacture, and so to the difficulty in dealing with foreign competition. In fact, he finds himself in a vicious circle in this respect. Nevertheless, prices have been brought down to the lowest possible level—a level which is far below the cost of production, after that cost has been based upon the market prices of materials, which, in turn, are being sold below cost. I cannot too strongly emphasize that further reductions are not possible without the risk of the gravest disaster and the collapse of the industry. Very much the same conditions hold good in Scandinavia, and British and Scandinavian prices are about on the same level—in some cases British paper is offered at even lower rates. In any case the level which has been reached is the bottom level.

Life and Death Struggle.

Capt. Nuttal says the British papermakers are struggling for their very existence, it is a life and death struggle both for them and their employees. They were all groaning about taxation, he added, but the foreigner who took orders escaped scot free from it as far as this country was concerned and to the cost of foreign paper must be added the cost of unemployment doles, plus the discontent and misery of his fellow-countrymen. "After all, gentlemen," he concluded, "the mental attitude plays a larger part in these matters than we sometimes imagine, and I repeat that the difference between a determined spirit of seeking to divert foreign business to British mills wherever physically possible and a spirit of apathetic indifference means just the difference between the British mills getting going again on the one hand, and closing down on the other hand. By the need of our stricken country to-day, by the sacrifices made and being made on the part of the British papermakers, by your own enlightenment and enlightened self-interest, I appeal to you to give serious thought to this subject." In my experience I have never known a stronger appeal to be made to users of paper on behalf of the British mills. It indicates the desperate position and the prevailing conditions—caused by cheap foreign paper for which there is undoubtedly a demand, the policy being, from the buyers point of view; "The cheapest we can get; don't mind the quality."

A Hint to Canadians.

Canada sends considerable supplies of wrapping papers in the year to the United Kingdom. They are competing with the Scandinavians and the products of the British mills. At present the wrapping mills are in a poor way in the United Kingdom for the want of orders and we are told every week that the Scandinavians and other producers are practically selling at less than cost price. Canadians are thus competing in a very difficult market and it behooves them to study and constantly investigate it if a connection is to be maintained in the present day slump and depression. Products from the Dominion wlll be received in many cases before the foreign; but everything depends upon the price and it is the price that is being looked to nowadays. It is only a question of tiding over the present general depression and fighting down the outcry against waste and high values stimulated by the daily newspapers. They stop at nothing and between the arguments foreigners slip in with their cheap products. Canadians must realize that if the British wrapping mills are fighting for a miserable existence on prices below the cost of production, producers of the Dominion will eventually find themselves on this side of the water fighting with their backs to the wall—unless they can combat the Scandinavians, Finnish, Austrian and German mills by hitting them back with their own prices. The whole situation wants careful watching as the Finnish and German mill owners are in London appointing agents and working up business.

McINNIS HEADS BOARDS OF TRADE.

The meeting of the Temiskaming and Northern Ontario Associated Boards of Trade at Iroquois Falls on November 10th was a memorable one in several ways.

A few of the many subjects discussed will be of interest. We quote the "Broker Hustler."

A Remarkable Tribute.

When the election of officers came, Mr. McInnis was nominated for re-election by Mr. Mathewson, of Cobalt, Dr. McInnis, of Timmins, Wesley McKnight, of New Liskeard, and Mr. Lilico, of Swastika, the enthusiastic applause practically forced Mr. McInnis to accept, although he had already explained that he wished to retire; in fact, the enthusiasm over his re-election was a very great tribute to the President of the Boards. The reception was so marked that it took Mr. McInnis, practically off his feet.

The other officers elected were:—Vice-President, H. E. Mathewson, of Cobalt, Secretary, F. K. Ebbitt, of Iroquois Falls.

Timmins was chosen for the February meeting on the hearty invitation of Dayton Ostrosser and Dr. McInnis.

Co-operation with Government.

In opening the meeting, R. A. McInnis said that the Boards had advanced considerably in their organization. The Boards had to feel their way at first, but now they had got to the point where their duties and scope were much simplified. The first object of the Boards must be co-operation with the Government, the T. & N.O. Railway Commission and other bodies which could be of use to the Associated Boards. The Board was co-operating with the Government. The first essential in all the problems of the North was the decision on what was to be done. When the Boards were united on this, then was the time to approach the Government.

The Boards had made progress, slow, it was true, but it was quite satisfactory. The people of the North had established themselves in this district in a manner without precedent and unique in Ontario. Through the Boards we were now in a position to accomplish something. We needed roads and we could get them. We can get the highway.

With roads would come more intensive settlement, which brings up the question of fire prevention.

In order to get some idea of the situation in Temiskaming, a study has been made of the land suitable for agriculture, the amount of water and waste land. It shows 70 townships opened to agriculture, or 1,612,800 acres opened to agriculture, and most of this has been taken up. Twenty per cent., or 300,000 acres, has actually been cleared.

These are things which the Board should take up. Reforestation should be eliminated as long as fires occur. Every other scheme should be abandoned except that of fire prevention. The fire prevention scheme of the Government is a good one, there can be no criticism of it, but it is weak in equipment and personnel owing to insufficient grants for this end. The cost to the Government is two cents. per acre for fire prevention. That needed no comment.

H. G. Schanche reported on fire prevention, that the Advisory Committee were working in close touch with the Government. Three things necessary were more money, more authority for the district chiefs, and more educational work among the settlers.

Question of Reforestation.

Mr. McInnis dealt with the handling of slash, reforestation and the prevention of fires. He said that he had talked these matters over with Premier Drury, and that when the present busy season at Toronto, partly due to the election, was over, he had Premier Drury's promise that the whole question of forestation would be taken up. He thought the first thing that should be done in connection with fire protection was to have a big convention of farmers, lumbermen, sawmill men, pulp and paper men, to get ideas. A less dangerous way of handling the slash would have to be planned and enforced. He understood the Government would increase the restrictions on the operators. All of them would be glad to carry out the new plan provided all were forced to do it.

The first resolution from the Local Boards taken up was that by Haileybury, urging the Government to set aside a district for reforestation. Paul Cobbold said that the Haileybury Board brought in this resolution to get something started. Fire prevention and conservation were the big things of the moment. The end of the lumber supply was in sight unless immediate measures were taken to conserve what we have and provide for re-growth. The water flow also depended an the forests, so that the guarding of the forests was very essential from that point of view as well. Mr. Cobbold's motion was seconded by Mr. McAulay

Fires and their Causes.

Mr. McKnight, of Haileybury, gave a very valuable report on fires, showing that in 1920 there were 1280 fires, of which the settlers caused 11 per cent., campers 11.7 per cent., railways 23 per cent., lightning 1.1 per cent., logging 4.6 per cent., and unknown 45 per cent. H. G. Schanche impressed on the meeting the terrible enemy that fire was. Thirty-six square miles with timber running six cords to the acre would run a 230 ton paper mill for a year. If a fire destroyed thirty-six square miles it meant a loss to the Government of $11,000 in stumpage dues and a loss in investment of six and one-half millions. On this same territory the Government spent at the same time two cents an acre, or $460. Would the Government not be justified in spending more?

Mr. McInnis pointed out that in the latest Blue Book it was stated that there were three fires in thirty-six square miles or more, which covered the district outlined by Mr. Schanche.

E. G. Poole said that the question was a big one, and should not be settled too quickly or without great thought. For instance, he was himself not sure whether an acre of cleared land was worth more to the Province than an acre of spruce. The settler took a different view from the pulp and paper man.

Mr. Cobbold, again speaking to his motion, pointed out that nature alone did not reforest in the way it was best for the country, that after a fire it was chiefly birch and poplar which grew up and not spruce or coniferous trees.

No Use Planting Out Trees.

Mr. Schanche said that it had been mentioned that at Norfolk there were 1,500,000 trees ready to set out. The Abitibi had the same number of trees at Twin, but he would be the last to recommend planting out that stock while there was the present danger from fire. It was simply throwing the trees into the furnace.

Technical Section

REVIEW OF RECENT LITERATURE.

A-14. Thwing Moisture Indicator for Paper. C. B. THWING, **Technical Association Papers,** iv, 1, 47-48 (June, 1921). The strength of paper depends largely on humidity conditions; i.e., on its moisture content. The Thwing moisture indicator has been developed more particularly with a view of finding the moisture content of paper to be tested for strength, tearing resistance, etc. The moisture content of a comparison sample hanging in the same room from the arm of a graduated balance is read off directly.—A. P.-C.

C-6. Circular Saw Guard. Can. patent No. 190,319, FREDERICK SWITZER, Vancouver, B.C., Canada, May 13, 1919. The guard consists of a shield in front of the edge of the saw. The shield is supported to move laterally from in front of the saw as the work to be cut advances towards the saw. Claims allowed 3.—A. P.-C.

C-6. Guide for Band Saws. Can. patent No. 190,226, AMASA HARVEY and JOSEPH W. CAUSEY, co-inventors, both of Charleston, South Carolina, U.S.A., May 13, 1919. Claims allowed 5.—A. P.-C.

C-7. Rossing Machine. Can. patent No. 190,296, ALEXANDER McLENNAN, Campbellton, N.B., Canada, May 13, 1919. Claims allowed 5.—A. P.-C.

D-4. Grinder for Production of Woodpulp. Can. patent No. 190,343, The Union Iron Works and Harry E. Tidmarsh, assignee of a half interest, both of Bangor, Maine, U.S.A., May 13, 1919. The grinder is supplied with one scraper per pocket to remove the pulp and prevent it from passing to the next pocket and being reground. Claims allowed 5. Also patent No. 190,344. Claims allowed 3.—A. P.-C.

E-5. Cooking of Sulphite Pulp. BENJAMIN T. LARRABEE, **Paper,** xxviii, 17 (June 29, 1921). A plea for general cooperation among superintendents for the study of all problems connected with the cooking of sulphite pulp and other processes connected with a sulphite mill, to bring about standardization of the cooking of sulphite pulp, as far as possible.—A. P.-C.

F-2. Constituents of Colophony and Sulphate Black Liquor. O. ASCHAN, **Ber.,** xlv, 867-886 (1921); **J. Soc. Chem. Ind.,** xl, 493a (June 30, 1921).—A new series of acids has been isolated from the residues left after the preparation of pinabietic acid from sulphate black liquor and also from American and from Finnish colophony. These are provisionally termed colophenic acids. They are monobasic acids which are differentiated from the resin acids by the ready solubility of their sodium salts in cold water and the stability of the solutions toward carbon dioxide.—A. P.-C.

H-1. Rapid Determination of Available Chlorine. MORRIS SCHRERO, **J. Ind. & Eng. Chem.,** xiii, 559-580 (June, 1921); **Paper,** Aug. 17, 1921; **Pulp and Paper,** xix, 1095 (Oct. 27, 1921). The method depends on the pressure exerted by the oxygen liberated by the action of hydrogen peroxide on hypochlorites in alkaline solution, according to the equation $CaOCl_2 + H_2O = CaCl_2 + H_2O + O_2$. The apparatus consists of two bulbs connected by means of a stopcock and a by-pass. The upper bulb has a neck which allows the apparatus to be clamped, and the lower bulb has an opening attached to it at an angle of 45 degrees. A manometer tube is fitted into a rubber stopper and to this tube is attached a sliding scale graduated to read in pounds of 35 percent bleach per gallon of liquor. A sketch is given showing the most convenient dimensions for liquor containing about 0.5 pound per gallon. The results obtained by this method do not vary more than 0.02 pound of 35% bleach per gallon of liquor from those obtained by titration with sodium thiosulphate, and if all necessary corrections were made it would probably be fully as accurate as some of our present laboratory methods. The apparatus can also be used for the analysis of permanganate, peroxides, perborates, carbonates, etc.—A. P.-C.

K-6. Process for Decolorizing Waste Paper. Fr. patent No. 518,596, WILHELM ABELE, Germany. **Papeterie,** xliii (June 10, 1921). Hot liquor (the nature of the liquor is not given) is forced through the mass of waste paper, eliminating the color and impurities and causing the paper to swell up.—A. P.-C.

K-7. Improvement to Disk Refiners. Fr. patent No. 517, 728, "Union des Papeteries," Belgium. **Papeterie,** xliii (June 10, 1921). The weight of the upper and middle disks is counterbalanced by suitable weights, the positions of which are adjustable along lever arms, so that the pressure exerted may be accurately adjusted.—A. P.-C.

K-8; K-12. Process for Coloring Paper in the Web. Can. patent No. 190,690, WILLIAM D. HARPER, New York, N. Y., U.S.A., June 3, 1919. A design in color, which does not spread or run, is applied to one surface of a moist web of paper while the latter is travelling during the process of manufacture, without compressing the web or disarranging the fibers in it, the color design penetrating the web to the depth required to produce itself in sharp and even outline on the other surface of the web. Claims allowed 2.—A. P.-C.

K-12. Process and Apparatus for Drying Paper. Fr. patent No. 516,178, OGDEN MINTON, U.S.A. **Papeterie,** xliii (June 10, 1921). Same as Can. patent No. 205,660, November 16, 1920.—A. P.-C.

K-12. Rubber Rolls. R. B. ADAMS, **Paper,** xxviii, 17 (June 29, 1921). Brief outline of the history and development of the rubber roll business, with a description of their methods of manufacture, characteristics, and "diseases."—A. P.-C.

K-12. Paper Machine Drives. W. W. CRONKHITE, **Paper,** xxviii, 17 (June 29, 1921). Brief discussion of the requirements of a paper sectional motor drive for paper machines and of the merits of the General Electric sectional motor drive.—A. P.-C.

K-12. Fourdrinier Machine. Can. patent No. 190,660, WILLIAM MURRAY and CHARLES E. PUTMAN, co-inventors, both of Chisholm, Me., U.S.A., June 3, 1919. The suction boxes are given a reciprocating movement in the direction of movement of the paper machine wire. Claims allowed 5. (Cf. Fr. patent No. 488,907, William Alex. Aitken, England. **Pulp and Paper,** xvii, April 3, 1919).—A. P.-C.

K-23. Apparatus for Manufacture of Electric Insulating Material from Paper Web.—Can. patent No. 190,264, EMIL HAEFELY, Basel, Switzerland, May 13, 1919. The Web is passed through a receptacle containing a powdered agglutinant and is then heated to melt the agglutinant on the web. Claims allowed 8.—A. P.-C.

K-23. Process for the Manufacture of Electric Insulating Material from a Paper Web. Can. patent No. 190,287, WALTER MEYER, Burgdorf, Switzerland, May 13, 1919. An agglutinant, in the form of a solid block, is pressed against the web as it passes over a heating surface so as to melt off and apply the agglutinant to the web. Gain allowed 1.—A. P.-C.

K-23. Reinforced Paper Strip for Box Corners, etc.—Can. patent No. 190,270, PATRICK TRACY JACKSON, Cambridge, Mass., U.S.A., May 13, 1919. As an article of manufacture, a reinforced or strengthened fabric comprising two plies which is normally dry but rendered adhesive on moistening it, an adhesive layer between the plies of paper, and a series of closely adjacent strengthening unspun fibers between the plies which are secured to them by means of the layer of adhesive. The lengths of the strengthening fibers are parallel to the cross-machine direction of the paper. Claims allowed 5.—A. P.-C.

K-23. Watermarking Handmade Paper. DARD HUNTER, **Paper,** xxviii, 17 (June 29, 1921).—A description of the method of making watermarks (ordinary, shaded, and colored) in handmade papers.—A. P.-C.

K-0. Standardization of Paper. W. HOWARD HAZELL, **Paper,** xxviii, 17, (June 29, 1921). A plea for the adoption of international standardization of unit of sale (recommends the "mille"=1,000 sheets) thickness, methods of packing, customs of the trade, and sizes.—A. P.-C.

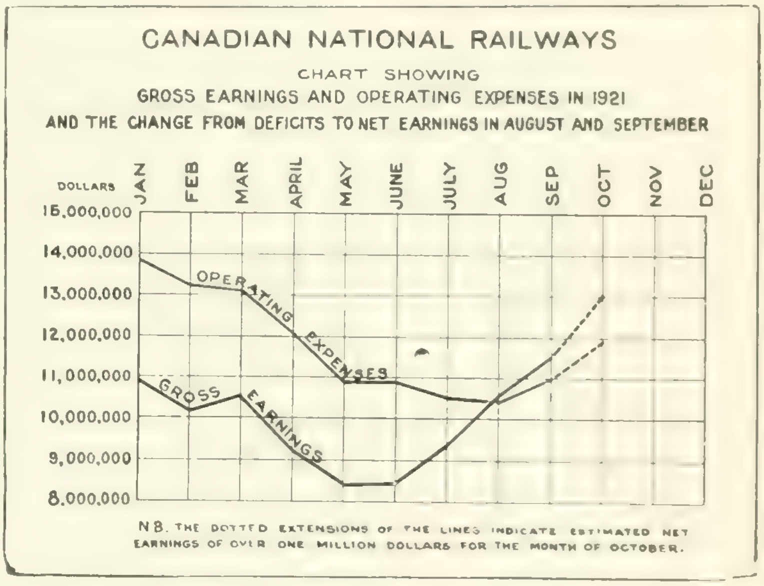
L-5. Softening of Vulcanized Fiber. Can. patent No. 190,346, Aktieselskapet Vulkanlaer-Industri, assignee of Thomas Cye, both of Christiania, Norway, May 13, 1919. Plates of hard vulcanized fibers are rendered flexible and supple by placing in a bath of water, impregnating the plates with a mixture of water and oils miscible with water, and finally exposing the plates to the action of a solution of calcium chloride in water. Claim allowed 1.—A. P.-C.

M-12. Paper Mill Lubrication. T. C. PORTEUS, **Paper,** xxviii, 17, 14-15, 30 (June 29, 1921). A discussion of the advantages of using greases for lubricating paper machinery.—A. P.-C.

O-3. Purification of Boiler Feed Water. F. BLUMENTHAL, **Z. angew. Chem.,** xxxiv, 189-192 (1921); **J. Soc. Chem. Ind.,** xl, 446a (June 30, 1921). A detailed review of the lime-soda, baryta, permutit, and Neckar processes for softening boiler feed water. The lime-soda process can only reduce the hardness to a limit of 2 or 3 degrees on account of the solubility of calcium and magnesium carbonates, and in addition soluble sodium salts and about 10 to 15 Gm. of sodium hydroxide per cu. m. are left in the water and pass into the boilers, which must therefore be blown out periodically. In the baryta and permutit processes, on the other hand, smaller amounts of soluble salts are left in the feed water. In the Neckar process, heating the feed water to 80° Cent. cannot cause the precipitation of the calcium and magnesium carbonates; such precipitation must be caused solely by the alkalinity of the boiler water which is returned to the purifier. Moreover, the statement that in this process the carbonic acid is entirely precipitated is quite incorrect, since it is all converted in the purifier into sodium bicarbonate, is fed into the boiler, and is there expelled with the steam, the residual normal carbonate being returned to the purifier, and the above operation repeated. Magnesium salts are completely precipitated only when sufficient sodium hydroxide is formed in the boiler by hydrolysis of the carbonate unless additional hydroxide is supplied to the purifier, which materially increases the cost of the process.—A. P.-C.

R-11. Technical Control at the Brompton Pulp and Paper Company. A. B. COPPING, **Pulp and Paper,** xix (June 23, 30; July 7, 1921). Notes on investigations of the technical service department at the East Angus mill at the Brompton Pulp and Paper Company, May to September, 1920.—A. P.-C.

K-18. Improvement to Calender Guards. Fr. patent No. 515,566, MIKE TELEZKY, U.S.A., Nov. 27, 1920. **Papier,** xxiv (May, 1921); **Papeterie,** xliii (May 10, 1921); **Monit.** Papeterie Francaise, lii (June 15, 1921). Same as English patent No. 131,616. See **Pulp and Paper, xviii** (April 29, 1920).—A. P.-C.



Canada, whether certain individuals approve or not, is the owner of 22,000 miles of railways together with all the rolling stock and equipment necessary to operate the same. This gigantic plant can be rapidly and permanently changed from a losing to a paying venture, if and when the Canadian people decide that they will give their own railroad a fair and equitable share of the existing passenger and freight traffic of the country.

Eastern people, as a rule, do not know what "hauling to market" means. Many western farmers, located miles from a railway, start out at dawn to draw a load of grain to an elevator. Arriving in town after dark, they have to board themselves and their team for the night at some expense. Next morning they deliver their grain to the elevator, do some necessary shopping and arrive back home after dark again—having been on the road some 36 hours. The construction of the Canadian National Railways was a tremendous boon to thousands of such farmers, by bringing shipping facilities much closer to their farms—literally cutting down the time necessary to deliver a load of grain from days to hours.

SULPHITE DIGESTERS

Digesters used for cooking wood chips in the sulphite process of making paper pulp are usually cylindrical vessels, with conical tops and bottoms. A common size that has been adopted by many companies is a diameter of 15 feet wth the overall height ranging from 30 feet to 45 feet, depending upon the capacity desired. Many factors enter into the proper construction of a sulphite digester.

First. Such materials must be used that will resist the chemicals of the cooking process.

Second. It must be strong enough to withstand the high steam pressure to which it will be subjected during the cooking period.

Third. It must be able to withstand the unusual strains and stresses caused by alternate filling and emptying of the digester and by the extreme changes of temperature.

In order that the digester will have the desired strength it is customary to make the shell from plates varying from 1 to 1¼ inches thick, with very carefully designed high-efficiency butt strap joints, using rivets 1⅛ or 1¼ inches in diameter. In detailing these high efficiency joints, care must be taken to see that there is very little variation from the theoretical pitch, inasmuch as only a small variation will materially reduce the efficiency of the joint. The integrity of the manufacturer must be relied upon to insure that this precaution is taken. In fabricating the digester shell, care must be exercised to see that the material around the rivet holes is not injured. Usually the holes are "drilled from the solid" ⅛ inch smaller than the nominal size of the rivet and then reamed to 1/16 inches larger than nominal after the plates have been assembled in the shop. The assembled plates must be carefully matchmarked in order that they can be assembled in the field in exactly the same order they were in when the rivet holes were reamed in the shop.

Digester Linings

The great problem in the development of the digesters for the sulphite process has been in finding of a suitable lining for the vessel. Ideal conditions would result from having a lining with exactly the same coefficient of expansion as the steel shell. This lining must be of such material that it would not be affected by the chemicals. Up to the present time such a lining has not been found. At the present time the usual type of lining is one made with acid-proof bricks separated from the shell by a layer of Portland cement and set in a jointing of litharge, quartz and glycerin. For a long time it has been the practice to calculate the stresses in a digester by means of conventional formulae for cylindrical pressure vessels without any consideration of the action of the masonry lining.

Prof. A. P. Mills and H. O. Keay made a series of tests several years ago at the plants of the Laurentide Company, Ltd., and the International Paper Company to see just what influence the expansion of the lining would have. Their series of tests extended over a period of some ten months and they found that at the end of this time they had an accumulation of residual stresses in the digester shells of between five and six thousand pounds per square inch, caused by the expansion of the lining during the operation. Further experiments are being carried on at this time by various interested companies to determine, if possible, a lining that will neither shrink in setting nor will expand during operation to such an extent that it will impose undesirable stresses in the shell.—The Water Tower

BRITISH INDUSTRIES FAIR.

F. W. FIELD.

The eighth annual British Industries Fair which embraces a large number of the most important lines of British trade, will be held in London and Birmingham from 27th February to 10th March. This is purely a trade fair where buyer and seller meet, not an exhibition. This Fair, whether regarded from the point of view of size, diversity of products shown or resultant business, now surpasses in importance and value to the world's markets any other trade fair or similar purpose. A visit to the Fair will convince overseas buyers that enormous strides have been made in Britain's post war production. A considerable number of Canadian buyers are making arrangements to attend. Admittance is restricted to trade buyers on invitation of the British Government and business is not impeded by crowds of sightseers.

While participation in the Fair is confined to manufacturers in the British Empire exhibitors, many overseas buyers will undoubtedly continue to utilize the services of merchant houses who fill so important a role in the export trade of the United Kingdom. From the buyer's point of view, however, the Fair has the great advantage of personal contact with the actual producer.

In organizing the Fair, the British Government Department of Overseas Trade pays particular attention to the comfort and convenience of buyers from the various Dominions and other parts of the world Special reading and writing rooms are available where buyers may consult qualified officers of the Department who will be able to indicate sources of supply of any goods required and to give information regarding tariffs, shipping and transport, trade conditions, etc., throughout the world. The catalogue of the Fair is a mine of information for it is not merely a list of exhibitors but a book of trade references of great value.

The London Section of the Fair will, as in 1921, be housed in the White City, a large group of exhibition buildings within a few minutes of the centre of London, and connected with every part of the London area by trains, omnibuses and street cars, while the Birmingham Section will again be in the great buildings of the Castle Bromwich Aerodrome, which may now be regarded as permanent Exhibition buildings, within easy reach of the centre of the city. There is a floor area of more than 1,130,000 square feet which is admirably suited for the purpose, and it is interesting to note that the gangways between the stalls total no less than 3½ miles in length. Not only are both sections of the Fair in London and Birmingham in each instance under one roof, but the various trades are grouped in separate but adjoining buildings, thus saving the time of the buyer who will find side by side with well-known firms, businesses of which he has probably never heard, but which are of equal interest.

The British Trade Commissioners in Canada will be pleased to give full particulars and to issue invitation cards to Canadian buyers who propose to visit the Fair at their following addresses:

248 St. James Street, Montreal.
260 Confederation Life Building, Toronto.
610 Electric Railway Chambers, Winnipeg.

PULP AND PAPER NEWS

The Riordon "tax-evasion" issue, as the Liberals term the Government's omission to collect the taxes due from the Riordon Company, Ltd., has assumed the proportions of a big factor in the election campaign just concluded. In Ontario, during the latter part of the campaign, scarcely a meeting was held at which the matter was not referred to at considerable length, and, on the whole, audiences were obviously impressed with the anti-Government side of the question. Of course, Conservatives claimed that, in not enforcing payment of the taxes when due, the Government acted with humanity, and that, moreover, it had seen to it that it was fully secured. But the Liberals adopted a line which countered this argument very effectively. One man told Sir Henry Drayton, the Minister of Finance, that he invested $3,000 in Riordon in 1920 when the Minister of Finance knew the financial situation of the Company, but the general public did not. "Do you think," he said, "I would have invested one penny if I had known the state of their finances? That is what the late Government has done for hundreds of investors in Canada." This aspect of the matter undoubtedly produced a deep impression which Mr. Meighen could not remove by his assertions that Mr. Carl Riordon was a supporter of the Liberal party. As regards the latter, whether he is a Liberal supporter or not, he has been personally attacked with the utmost vigor from Liberal platforms in Ontario.

Considerable interest is evinced in the notification that a large pulp and paper mill is to be erected for the British Columbia Government at Prince George, B.C. It is understood that it will represent an investment of some $7,000,000 and that when completed, it be one of the largest pulp and paper mills on the continent.

The Bulletin of the Imperial Institute gives a comprehensive account of the giant grasses, found in tropical and sub-tropical countries, which, many of them, are said to give a satisfactory yield of pulp which produces good paper. Up to the present time, such countries have relied mostly on the forests of the northern temperate regions for their supplies of paper-making materials. For example, wood pulp, produced from spruce and other timbers in Canada, the United States and Norway and Sweden, is imported into India and Australia for the manufacture of the cheaper kinds of paper, while other of such countries, such as tropical Africa, for instance, where manufacturing industries are, as yet, in a comparatively elementary stage, import practically all their paper ready-made. It now appears, however, that, in nearly all such countries, there are native products, of the nature of giant grasses, which can be used for paper-making, and, in some them, a survey of their natural resources of this kind is being undertaken. In India, bamboos appear to be the most promising source of paper-pulp, but in other countries huge grasses, many of them very similar to bamboos in appearance, and which, it is apprehended, can be used for the same purpose, exist over large tracts of land. In eastern tropical Africa, a species of giant grass, known as Elephant grass, is found, and this material has not only been subjected to comprehensive and exhaustive tests, but it has also been used for the printing of Government paper, of excellent quality, in Uganda. While grasses of this kind could not, owing to their bulk, be profitably exported, it looks as though, in the countries to which they are indigenous, an extensive use may be made of them for paper-making and also for conversion into pulp for export.

As is notorious, lumber production in Canada, this year, has been on a very much smaller scale than usual. The amount of business being done in lumber at the present is very limited, indeed. For the most part, retail yards are ordering only for necessities as they arise, and are not attempting to cater to a probable future demand. Building construction, which, owing to trouble over the high cost of both materials and labor, at no time attained anything like adequate proportions, is now rapidly slowing down everywhere. Buyers are probably holding back, and, while there may be no immediate shortage, wholesalers incline to think that this will develop in the future. Once the buying practice begins, it will probably spread quickly. At the moment the downward movement of prices has now reached a point at which producers of lumber are constrained, so they claim, to take a loss on all that is logged at the present market level. But, once buying begins, a shortage is quite likely to become speedily apparent. For the light production of the present season—a production only from twenty-five to thirty-five per cent of normal—will not add sensibly to stocks of dry timber. The British market for Canadian hardwoods is stated to be improving.

A charter has recently been granted to the United Paper Company, Ltd., of Quebec City, to deal and trade in paper, and to manufacture and sell paper boxes, roofing papers, twine, etc.

The Wilson-Munroe Company, Ltd., of 106-108 York Street, Toronto, will be located in its new premises, 18 to 20 Duncan Street, Toronto, as from the first day of the New Year. The Company is to be heartily congratulated on these new premises which are both very commodious and very commercially situated. Further than that, they not only present a highly attractive appearance, but they afford complete and up-to-date facilities for the handling, under exceptionally favorable circumstances, of the requirements of the Company's large and constantly increasing clientele. For some time, the Wilson-Munroe Company, with its business, both in scope and in volume, continually extending, has felt itself handicapped by considerations of space. In the location on Duncan street, to which it is moving on the 1st of January, it will be subject to no such disabilities. The large building which it has purchased consists of three floors in addition to the basement. It will afford ample space for the thriving business of which it will constitute the scene of operations. It will enable the Company to carry larger and more varied stocks and to extend its policy of "broadening out" in a way that will be not only in consonance with the progressive spirit of the organization itself, but will also be, in the highest degree, satisfactory to its many customers. Altogether the Company will now find itself in first-rate shape.

The directors of the Spanish River Mills last week held a meeting in Montreal. Those present included Messrs. G. H. Mead, president, P. B. Wilson, vice-president, G. Gray, and C. H. L. Jones.

Mr. T. P. Howard, controller of the Howard Smith Paper Mills, Limited, Montreal is recovering from an attack of pneumonia.

A card just received from Wm. Whyte in Christiana, says he has had an excellent business trip and will be back in Montreal by Dec. 18. The picture shows Norway's capital, a very beautiful city.

A report from Victoria, B.C., states that the American freighter, Robin Goodfellow, completed her cargo, viz: loading 2,000 tons of pulp at the Whalen Pulp and Paper mills plant at Port Alice.

ANNUAL MEETING C.P. & P.A. IN MONTREAL.

At a meeting of the officers of the Canadian Pulp and Paper Association it was decided to hold the annual meetings during the week of January 23. Arrangements are now being made for the annual meeting of the general association on Friday, January 27, at the Ritz-Carlton Hotel, Montreal, to be preceded by meetings of the different sections on Wednesday and Thursday, January 25 and 26. The Woodlands section will hold its meeting on Wednesday, January 25, at the Windsor Hotel, Montreal.

An unusually interesting series of problems affecting the technical side of papermaking are expected to have a place on the agenda of the technical sections.

At the Woodlands section meeting it is proposed to centre discussion upon the question of the adoption of a permanent practical forestry policy, by the respective Provincial Governments. Mr. G. C. Piche, chief forester of the Province of Quebec, will give a more or less, exhaustive report on his observations of technical forestry made during his trip to Europe during last summer. This address will have particular reference to the applicability of European methods to the province of Quebec. As the subject of forest conservation is coming more and more to the front, it is expected that Mr. Piche's address will lead to a full and instructive discussion.

Up to the present it has been the custom for the incoming President to preside at the festivities in connection with the annual meeting of the Association. In January a change will be made, and the festivities will be presided over by the retiring President.

BIG MARKET LIKELY FOR B.C. PULP INDUSTRY.

Things are looking bright for the pulp industry of B.C., says a despatch. Two new markets are gradually opening up. Mexico and Japan are both in the field with demands for this product. Japan wants a great deal for paper making, which is becoming a great factor in Nipponese commerce, and Mexico has announced that a ready market is opening there. Japanese exporters on the coast say the demand will be greater than ever in 1922, and expect a heavy call to supply new mills that are opening up in Japan.

PULP SHIPS RETARDED BY ICE.

The importance of having adequate ice-breaker service on the St. Lawrence so far as the pulp industry is concerned, is reflected in the fact that there have been difficulties with the clearance of two vessels on the Saguenay, which had been scheduled to load in the closing days of last week. This means that there would have been half a million dollars' worth of exports out of this Province had there been available in the closing days of the season a powerful ice-breaker for service around the mouth of, and on, the Saguenay.

It was stated yesterday by Mr. A. M. Irvine, a director of Becker & Company, of America, Montreal office, that this season fifteen vessels have been cleared with pulp cargoes for European and United States ports from Saguenay; but owing to the lack of ice-breaker service two vessels over and above this number bound for the Saguenay were involved with ice difficulties. One of them, which arrived after the ice had formed, was compelled to proceed elsewhere, this being on Friday last. In the other case, realizing the necessity of getting the vessel out, communication was opened with the Department of Marine and Fisheries, whereupon the Deputy Minister of Marine and Fisheries despatched the Government ice-breaker Montcalm to the spot, though this was only possible owing to the fact that the Montcalm happened to be available at the moment. At this season, however, it frequently happens that these two vessels, the Montcalm and the Lady Grey, are busy with special duty, such as picking up buoys and calls from other sections of the river. In this case, however, the Montcalm was able to go to the relief of the Domira, one of the steamers of the Preston Steam Navigation Company, and it passed outward on Friday last. The second vessel had to be diverted elsewhere.

It is quite evident, argued Mr. Irvine, that if the ice-breaker could have been at the disposal of shipping in the lower St. Lawrence for the closing days of this season, that Canada would have benefitted to the extent of a million or more dollars' worth of exports this season.

SISSIBOO PULP MILLS RESUME.

The Sissiboo Pulp & Power Company's mill at Weymouth Mills, N.S., have resumed operations. Arthur Hatt is superintendent. The mill has been closed for about five months, during which time many repairs were made and more machinery installed.

The Pulp Company expect to have the new railway spur in operation in the near future.

Mr. George R. Naden, Deputy Minister of Lands for British Columbia, has just made a week's inspection trip in the timber involved in the proposals for a pulp mill at Prince George, B.C. Mr. Naden was necessarily non-committal with respect to what the Minister, Hon. Mr. Pattullo, might decide, but hoped for a successful and satisfactory statement.

"Start to-day and make Safety part of your work," says the Safety League.

UNITED STATES NOTES

An indication of the rapid growth of the wood pulp and paper manufacturing industry in the South is shown in a report recently completed by the Forest Service of the United States Government. Comparing figures of 1920 with 1916, the report shows an increase of almost 100 per cent. There were eleven mils operating in the Southern States during 1920 and production amounted to 144,604 tons of wood pulp, as compared with only 87,339 tons in 1916.

A national campaign of education to emphasize the necessity of a reforestation program will be one of the immediate results of the hearings of the forestry policy committee of the United States Chamber of Commerce which were recently concluded in New Orleans. Resolutions endorsing the work of the forestry policy committee and expressing appreciation of leading lumbermen of the south and the Louisiana Department of Conservation featured the final hearings.

Members of the committee mentioned in the foregoing item, were the guests of honor at a dinner tendered them last week in the Pine Tree Inn at Bogalusa, La. W. H. Sullivan, Mayor of Bogalusa, La., who presided, announced that plans have been completed for the erection at Bogalusa of a new paper mill, the exact duplicate of the present one, and employing approximately the same number of men. An outlay of more than one million dollars will be required for the new project, declared Mr. Sullivan. The members of the committee and lumbermen from many parts of the country were taken on a tour of inspection through Dixie Ranch, near Slidell, where they viewed the thousands of acres of second-growth pines now ready for the pulp mill. Escorted by the Bogalusa Chamber of Commerce, the committee also visited the timber lands of the Great Southern Lumber Company, viewing the reforestation work being carried on there. The visitors commented favorably on the Salmen holdings at Slidell as a fine example of what can be done throughout the country.

New York service houses of the American Writing Paper Company gave last week in the United Publishing Corporation Building, 239 West 39th Street, New York City, an educational exhibit of paper-making. The show, which was free to the public, included visible demonstrations, showing processes of rag-sorting, beating, bleaching, water-marking, deckling and loft-drying. Envelope machines were shown in actual operation, and there was a paper-testing laboratory with equipment as complete as any in the world. This laboratory ensemble, staged by the American Writing Paper Company, was in charge of Miss Helen U. Keily, an expert chemist and head of the company's department of technical control. The envelope-making exhibit is that of the United States Envelope Company, Holyoke, Mass. The envelope machine is of the most modern type and has a capacity of six to ten thousand an hour, depending on the style or size of the envelope. In contrast with the up to date machinery was an early prototype brought to New York for the exhibition from the United States Envelope Company's historical museum at Worcester, Mass. Among the exhibits of greatest interest to the casual visitor was a wonderful little paper-making machine, said to be the smallest of its kind in the world, it was shown in operation, turning out a tiny sheet of paper 4 inches wide, at the rate of 3 feet a minute.

Philip T. Dodge, president of the International Paper Company, tendered a dinner last Thursday at the Lotos Club, New York City, to Mark Sheldon, Australian Commissioner to the United States, who sailed for home on Saturday.

President H. S. Zellerbach, of the Zellerbach Paper Company, San Francisco, is travelling through the East, making a study of the model paper distribution houses.

Modern Pulp and Paper Making, by G. S. Witham, Sr., has been published through the book department of the Chemical Paper Company. Mr. Witham's treatise, while a rather bulky one, might well serve as a sort of handbook of value to those engaged in the pulp and paper making industry and to those contemplating entering it. It is a book of sober practical purpose and technical detail that describes processes, the machinery by which they are carried on, and the methods of the business. The volume is copiously illustrated and it contains many diagrams and pages of useful data. (See Advertisement, page).

The Williams C. Jones Company, which operates one of the model envelope plants in New York City, reports that it has had a capacity business during the year. The concern has had to move to new quarters recently where its floor space has been doubled, so that it now occupies 16,000 square feet. This plant, replete with every modern machine used in expediting envelope manufacture, has a capacity of 500,000 envelopes a day, but it is being crowded to the limit by the rush of business, according to one of its officials. While many envelope manufacturers were reporting trade as being dull, the Jones Company claimed that its plant was kept going night and day throughout the depression of the past year.

A charter under the laws of Delaware has been granted to T. L. Crateau, M. A. Bruce and C. H. Maxwell, all of Wilmington, Del. as incorporators of the Nashville Pulp and Paper Company, which, with a capitalization of $1,200,000, will engage in the manufacture of paper, dealing in pulp, etc at Nashville, Tenn.

An announcement has been sent out by Parsons & Whittemore, New York City, informing newsprint consumers and buyers that the Finnish Paper Mill Association has appointed the Parsons & Whittemore Co., exclusive agent for Finnish newsprint imported into the United States. Prospective buyers are urged to send in their specifications early due to the limited tonnage available for the year 1922. It is stated that shipments may commence in January, and that the price at present is 3¼ cents per pound c.i.f. Atlantic ports.

According to a report compiled by the Woodlands sections of the American Paper and Pulp Association in co-operation with the United States Forest Service, forest fires in the pulpwood regions of the United States during 1920 numbered 14,463, burning over 2,059,408 acres. The total damage by these fires throughout the country was $6,319,641.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 3rd Dec. By the time that these lines are in print, the Dominion election will be a thing of the past; and it will be possible for the pulp and paper industry to take a survey of the situation as modified by the calling into being of a new House of Commons, and gain some general idea of how far it is likely that either hopes or fears may be justified. However the election goes, this much of good must issue from it: that it will end uncertainty. For uncertainty in the political world almost invariably spells unsettled conditions in the industrial field. Although the election campaign unquestionably resulted in an increased demand for certain lines of paper, it may yet well be doubted whether the direct good, which it achieved in this direction was not more than counterbalanced indirectly by the business unsettlement which a campaign so protracted as that which we have recently experienced, unquestionably tends to foster and to accentuate. At the same time, the pulp and paper industry, as a whole, has certainly not been affected to the same extent as have certain other industries, which occur to one's mind very readily, by that disturbance of business conditions for which, in greater or less degree, a general election is always responsible. Trade generally has been pretty good in the last week in the industry. Business continues to be marked by a gratifying steadiness, although a somewhat more appreciable degree of quietness than had been expected characterized some lines, and perhaps, too, the expansion of scale of purchasing operations which had been anticipated has not quite come up to expectations. However, informed opinion to the effect that, looking at the situation as a whole, things are on the up grade, remains unchanged. The chief handicap to the industry is that general business conditions are not picking up as it had been expected that they would. Of course, there are exceptions. For example, in certain lines of textiles there is genuine activity largely seasonal just now. But some industries are almost dormant. Talking this week with four very prominent manufacturers—and in widely different branches of industry—the writer was certainly impressed with the fact that none of them took a very roseate view of the likelihood of general business revival on a scale of real magnitude in the near future. "Optimism" said one of them, summing up the matter, "is the right spirit for business, and optimistic talk stimulates business provided it is reasoned. But how can I talk optimistically when I am ready to take orders without making any profit, simply to keep my organization over the winter, and yet have combed the Dominions for such orders and without success?" It is that kind of situation which results in buying being still on a limited scale in the paper industry, though it must be added, on the other hand, that there is, in the aggregate, a great deal of it. Prices, on the whole, continue firm, and one is told, with pretty general unanimity, that the tendency is to mount rather than to drop.

PULPWOOD.—The pulpwood market is looking up somewhat. If next year is a busy one in the pulp and paper industry, then pulpwood dealers will find a market for their present stocks of pulpwood at considerably enhanced prices, particularly in view of the fact that so little is being cut this winter. Should a real buying movement commence, they will find themselves "in clover."

NEWSPRINT—The pulpwood for newsprint still keeps up. In spite of the fact that there is a good deal of unemployment, newspaper circulations are on the increase. This is due to the drive for increased circulations in which some Ontario papers are engaging. There one finds one paper giving away some household requirement as a sort of premium to subscribers, while another promises to donate bicycles to lads who will will get it subscribers. There is a good deal of talk of the starting of additional newspapers—one of them is to be in Toronto. All this sort of thing means an increased demand for newsprint. Unless absolutely destitute, people buy newspapers, unemployment notwithstanding. In addition, during the election campaign many of the newspapers increased the size of their editions. Altogether, the newsprint branch of the industry has been characterized by much activity.

BOXBOARD—The boxboard plants are running full. The price on many lines was recently jacked up, and, as often happens, this seems to have had the effect of stimulating, rather than abating the demand.

BOOK PAPER.—Just now the book paper business is noticeably good. The consumption is showing a decided increase, due, no doubt, to the fact that many commercial firms are giving orders for a good deal of printing in the way of catalogues and other commercial literature.

WRAPPING PAPERS.—The demand for wrapping papers continues to expand, as is natural at this season of the year. In its kraft aspect, particularly, the situation looks favorable.

TOILETS AND TISSUES.—Even when things were looking at their worst in the industry generally, one found a very high degree of confidence manifested by the manufacturers of toilets and tissues. Indeed, the head of one such concern gave accounts, from time to time, right through the dullest period, of operations at his mills, to the writer, which were, relatively speaking, of a satisfactory nature. Today these concerns are experiencing a rush of business, and, as much of it is of the "hurry up" kind, some difficulty in giving delivery at the moment required is being encountered. And not only is business good at present, but prospects ahead are indubitably bright.

RAGS AND WASTE PAPERS.—The improvement in the demand for rags and waste papers continues to develop. Not so very long ago the market was absolutely dead. But now prices have advanced in several lines owing to scarcity in supply and the outlook altogether shows marked improvement.

The Outlook in Montreal.

Montreal, December 6.—Inquiries in all sections of the pulp and paper market indicate that business is generally satisfactory, and that prices are being maintained. Trade is slowly recovering, and there is a feeling of confidence that at one time was sadly lacking. It takes a considerable period to fully restore that feeling, but a spirit of optimism is abroad, founded on a belief that the industry is on a sure foundation. In one or two sections orders are none too plentiful, while in others the mills are on full time, with good business in sight.

PULP. — The demand for bleached sulphite is fairly good, prices holding firm in keeping with the recent advances by U.S. mills. Ground wood is not particularly brisk, the price being about $26 at the mill. Kraft commands $62 at the mill, with a moderate demand.

NEWSPRINT. The recent reduction by the Canadian Export Paper Company to $75 and the report that the International Paper Company will go one better and cut the price to $70 have been the prominent features in this section. The. report referred to was not welcome news, and was reflected in the price of the paper stocks. It had been unexpected, especially as it was understood that the International had no intention of entering upon a price-cutting policy, which will be of no benefit either to American or Canadian mills. The fact that the companies have still large stocks of pulpwood bought at high prices is an argument against the initiation of such a policy. It may be taken for granted that if the report is confirmed Canadian mills will meet the competition.

BOOK AND WRITING PAPERS.—The market is good. Orders are coming in satisfactorily, and the outlook is promising.

FINE PAPERS.—On the whole, business is fair, having been stimulated by the lower range of values.

BOARDS.—After a period of briskness, there is a lull in the orders, due to the taking of inventories. It is expected, however, that trade will again pick up by the middle of January.

WRAPPING PAPERS.—There is a good demand with a tendency for prices to stiffen a little.

ROOFING PAPERS.—Not a great deal of business is passing, due to the fact that the building season is practically over, and that the principal purchasers from manufacturers are not inclined to commit themselves for the present.

RAGS AND WASTE PAPER. Rags for paper making are in fair request. There are many inquiries for waste paper, but the supply is limited and not equal to the demand.

TISSUES AND TOILETS.—The trade has been very brisk, but is now quieter.

NEW YORK MARKETS.

New York, December 3.—(Special Correspondence) —Reports going the rounds of the local paper trade are to the effect that leading domestic manufacturers intend to cut prices on newsprint for the first quarter of the new year to $70 per ton f.o.b. mills, representing a decline of $10 per ton or half a cent per pound from the rate prevailing during the final three months of this year. No definite announcements have been made as yet, but it is generally accepted as a foregone conclusion in paper circles that $70 will be the contract basis fixed for next January, February and March deliveries. Ever since a cut of $5 a ton to $75 was announced several weeks ago by Canadian producers, the trade here has been waiting for domestic manufacturers to follow suit, and indications are that American producers plan to outdo their fellow manufacturers across the border by cutting prices twice as deep as the latter. It is felt here that if manufacturers in this country fix a price of $70 per ton that Canadian producers will readjust their prices to the same basis, and that this figure will be the ruling quotations in both countries over the next quarter.

Of course all attention locally is directed on the International Paper Company—the most important factor in the newsprint manufacturing industry of this nation. President Philip T. Dodge of the I.P. is quoted in a report published yesterday as admitting that his company will in the course of the next few days announce a price of $70 a ton on newsprint in standard rolls for delivery during the first quarter of 1922. Mr. Dodge stated that the labor situation as affecting production of newsprint is improving daily and that as recently as last Wednesday the I.P. mills produced 900 tons of paper of all kinds, which is about 50 per cent of capacity. He added that he expected within the next three weeks to reach capacity production of 1,800 tons daily, as additional men are being put to work in the mills as fast as they can be obtained. Mr. Dodge declared that at $70 per ton his company will lose money, but that it was hoped, however, with increased production to more than make the loss up.

The monthly review of the paper industry in the United States for October of the Federal Trade Commission contains figures of a very gratifying character. Production of paper in October exceeded by far that of any month thus far this year, amounting to 542,408 net tons of all grades, compared with 477,926 tons in September, showing a gain in a single month of 64,482 net tons, and being no less than 171,984 tons greater than the production in July last when the depression in the paper market was greatest and manufacturing operations at the lowest point of the year. These figures indicate that whereas paper mills in the States operated at only about 50 per cent of capacity in July, based on the high marks of output reached during the boom last year, manufacturing operations were in the vicinity of 80 per cent or better of capacity in October, which, to say the least, is a most encouraging gain.

There is no question but that trade activity in paper has slowed up to a pronounced extent in New York, and, from all accounts, in all the other large distributing and consuming centres of the country. Printers and publishers and other important consumers of paper have noticeably let up in their buying recently, and the movement of paper of virtually every grade has slowed down. It is becoming more and more apparent that this is due to consuming concerns having experienced a lull of activity in their own spheres and also to their endeavouring to reduce stocks of goods so as to make as favorable a showing as possible in their year-end inventories. As one representative paper jobber termed it, the condition of the market locally is "sloppy". Demand lacks that snap that was such a feature not long ago, orders are mostly for hand-to-mouth lots of paper, and mills are sharply competing with each other in an effort to obtain as much of the business as is to be had. Prices are again fluctuating broadly, and more often in a downward direction, as would be expected with manufacturers and merchants matching their wits and quotations in the battle to procure orders.

Newsprint is probably the firmest grade of paper, that is, as respects the immediate situation. Some offerings of imported newsprint at around 3.25 cents per pound on the dock are reported, but domestic producers are mostly securing at least 4 cents at mills for spot shipments of standard news, with some sales recorded at 4.25 cents. Print paper is moving toward publishers in a consistent way and in good tonnage, and there are no signs of any large surplus being available; in fact, the Federal Trade Commission's report shows that on October 31 but five days' average supply was held in stock by mills. The probabilities are stocks have been even further diminished since then.

Book papers display an easy price tone and some mills are cutting quotations to get business. There are reports of some sales of machine finished book at less than 6 cents per pound f.o.b. New York, while coated book paper is said to be selling in some instances down to 8 cents. Tissues are fairly steady in price but are in less demand, while wrappings are sought in smaller volume. Fine papers are holding up in price and there is a proportionately good demand for bonds and ledgers. Boards are quiet and weak. Plain chip has sold in New York this week at $28 a ton delivered sidewalk, and news board at $30, denoting declines of fully $10 per ton from recently prevailing price levels.

GROUND WOOD.—Mechanical wood pulp rules moderately steady in price and demand is sufficient to absorb the great bulk of supply offered though consumers do not seem as anxious for pulp as recently. Around $32 a ton f.o.b. grinding plants is the average of quotations named by domestic producers in Upper New York State and New England, and importers of Scandinavian and German ground wood are getting from $31 to $33 a ton ex dock New York for their pulp, making prices delivered at consuming points figure out in the near vicinity of $39 to $40. Canadian producers are reported quoting at the same delivered basis, with the result that they are in frequent cases realizing no better than $28 to $29 per ton net at shipping points, owing to the larger freights they have to pay.

CHEMICAL PULP.—Prices on domestic bleached sulphite are now at a basis of 5 to 5.25 cents per pound f.o.b. pulp mills, the higher figure being quoted on extra strong bleached and the lower on the regular No. 1 grade by leading producers. The rise in domestic pulp has occasioned higher prices on imported bleached sulphite, for which importers are now asking 4.50 cents ex dock on strictly No. 1 grades and around 4 cents on secondary qualities. Easy bleaching sulphite also is trending upward and most quotations at present range between 3.25 and 3.50 cents a pound on both domestic and foreign easy bleach. Kraft pulp holds steady at 2.75 to 3 cents on No. 1 domestic, and at an average of 2.75 cents for Scandinavian Kraft.

The chemical pulp market is quiet in comparison with the conditions obtaining a short while ago. Paper manufacturers are buying in limited amounts, yet they are readily absorbing any lots of pulp offered at what can be construed at price concessions. Sentiment in the trade is that consumers are holding back in buying until after the turn of the year, when it is expected the market will open up with a rush.

RAGS.—Business in papermaking rags is of little consequence. Demand from consuming quarters is at best light, and the limited buying being engaged in by mills is scarcely sufficient to sustain values, with the result prices are gradually sliding off.

PAPER STOCK.—Although demand for old paper has failed to expand, prices on most grades have steadied, largely because values have sunk to levels where there is little room for further decline. The market is in that condition where mills are procuring such tonnage of goods as they want at practically their own bidding prices.

OLD ROPE AND BAGGING.—Demand for old manila rope holds up fairly well and quotations are maintained at between 4.75 and 5 cents per pound at dealers' shiping points for rope in No. 1 condition of both domestic and foreign origin. Old bagging is in a lifeless market state and quotations are uncertain at about 90 cents per hundred pounds for No. 1 scrap bagging, and 1.10 cents a pound for No. 1 old gunny bagging. Mixed strings are selling in some directions in limited amounts at approximately 90 cents per hundred New York.

GENERAL CHEMICALS.

Current Wholesale Prices in New York Market, week of 30 November, 1921.

		Carlots	Less Carlots
ACID, Acetic, 56 per cent	100 lbs.	6.00-6.25	6.50-7.00
" Glacial, 99½ p.c., carboys	100 lbs.	10.00-10.50	10.75-11.00
" Hydrochloric	100 lbs.	1.25-1.50	1.60-1.75
" Sulphuric, 66 deg., drums .	ton	21.00-22.00	22.50-23.00
" Sulphuric, 66 deg., drums . ..	ton	21.00-22.00	22.50-23.00
ALCOHOL, Ethyl	gal.		4.65-5.00
" Methyl (see Methanol)			
" Denatured, 188 proof	gal.		.37-.38
ALUMINIUM Sulphate, commercial	lb.	.01¾-.02	.02¼-.02½
" Sulphate, iron free	lb.	.02¾-.03	.03¼-.03½
AMMONIUM Chloride, granular, (white salammoniac)	lb	.07-.07¼	.07½-.07¾
" Chloride, granular, (grey salammoniac)	lb.	.07-.07¼	.07½-.07¾
BARIUM Sulphate, (prec.) (blanc fixe)	lb.	.04-.04¼	.04½-.05
CALCIUM Hypochlorite (Bleaching Powder)	100 lbs.	2.25-2.30	2.35-3.00
CHLORINE, gas, liquid, cylinders, (100 lbs)	lb	.08-.09	.09½-.10
GLYCERINE, C. P., drums extra	lb		.14½-.15
LEAD Nitrate	lb.		.15-.20
LITHARGE	lb.	.08-.08¼	.08½-.09
METHANOL, 95 per cent . ..	gal		.66-.68
POTASSIUM, Bichromate	lb.	.11-.11¾	.11½-.12
" Hydroxide, (Caustic Potash) .	lb.	.05¾-.06	.06¼-.08
" Prussiate, yellow	lb	.21-.21¼	.21½-.22
SALT CAKE (bulk)	ton		20.00-22.00
SODA ASH, Light	100 lbs.	2.00-2.10	2.15-2.50
" " Dense	100 lbs	2.35-2.40	2.45-2.70
SODIUM Borate, (borax)	lb.	.05½-.06	.06½-.07
" Carbonate (sal soda)	100 lbs	1.80-1.90	2.00-2.20
" Hydroxide (caustic soda)	100 lbs	4.00-4.10	4.15-4.50
" Prussiate, yellow	lb.	.14½-.14¾	.15-.15½
SULPHUR, Crude	ton	18.00-20.00	
" Dioxide, liquid cylinders extra	lb.	.08-.08½	.09-.10

Buying power in the New York market was interrupted by holiday period (American Thanksgiving). One prominent item was the position of caustic soda in foreign markets—large tonnage sales were recorded —the bulk being shipped to Europe and South America.

It is claimed that the big shot for expansion depends upon the result of the disarmament conference.

WHY DON'T YOU GO TO CHURCH?

You are too tired to go to church! What nonsense. There isn't a place on this continent so restful as the church. You are going to lie around the house all day; loll in a rocking chair; go to sleep over a book. That isn't resting, that's loafing. Tell yourself, honestly, did you ever in your life see a loafer who looked rested? Did you ever see a loafer who didn't look tired all the time? The people who try to rest are always tired. Resting is the hardest work in the world when you make work of it. Two hours in church, two hours in the quiet; the music, the sermon, the reading, the uplift which comes from the new channels into which your mind is led, will rest you more physically, morally, intellectually, than all the day spent in trying to rest. Why don't you go to church?—Bob Burdette.

New York, December 1st, 1921.

Removal Notice.

We desire to annouce the removal of our office to more spacious quarters on the seventeenth floor of the Vanderbilt Concourse Building, 52 Vanderbilt Avenue (opposite Grand Central Station at 45th Street), where we will be pleased to welcome you at your convenience.

Lagerloef Trading Company, Inc.

Telephone } 4246
Murray Hill } 4247

THE SAFETY HABIT.

Safety should be a habit. A thing done the first time is hard to do. The next time it is easier, until in a short time it is done without the slightest thought purely mechanically.

It is the same with safety. If safe methods are adopted in every action around the machines, and in every bit of work done, it is a little strange at first, but presently a man gets the safety mind and he does things the safe way in a purely mechanical manner.

Christmas will soon be here. What is your present going to be to your wife and kiddies? Is it going to be a full pay envelope with nothing off for accident due to carelessness, or is it going to be a slim envelope and a maimed body?

The National Safety News tells of a foreman, Mike McDonald, six feet two, who says what he means, and stands by it. When Mike first heard Safety talk he characterized it as a lot of hot air. Then one day one of Mike's best men, working on a line shift, was caught on a set screw and whipped to death. Mike had to break the news to the wife and children.

The morning after the funeral Mike called all his men together. "We have lost one of our best men and a widow and five children have been left. I was to blame. It was up to me to remove that set screw. Beginning this morning, we are going to make this department safe. I will go the limit to keep you men from being injured, if you will go with me, and I want every man to consider himself a committee of one and report to me anything which may cause an accident."

Inside six months every machine in a dangerous condition in Mike's department was guarded. He made a record of two hundred days without an accident, and reduced the lost time due to accidents by 72 per cent. When asked how he did it, his reply was, "The way to do safety work is to go at it with two hands and a heart and get your men with you."
—Broke Hustler.

The Quebec Government has agreed to a grant of half the cost of a new bridge over the St. Francis River, East Angus, to be paid in five instalments. The interest on the instalments is to be paid in advance. The Brompton Pulp and Paper Company, whose plant adjoins the bridge, will pay one-third of this amount.

VAPOR ACCUMULATOR.

An invention which should be of great interest to the chemical pulp industry as well as to other industries working with varying steam demands, breweries, sugar refineries, etc., is the Vapor Accumulator, patented in some thirty different countries, among which are Canada and the U.S.A.

The principle of the invention is to equalize the varying requirements for steam in an industrial plant by storing the heat in water when excess steam is being produced, and giving off this steam when it is needed, thus practically making the boiler plant independent of the variations in the steam consumption.

As, under these conditions, the firing can be carried on evenly, and without either forcing or holding back, and as the load, consequently, can be kept comparatively constant, the fuel can be utilized very effectively.

The Brown Corporation, La Tuque, Que., have had an installation of a Vapor Accumulator in operation in connection with their sulphate pulp mill, for some six to eight months.

The Vapor Accumulator consists principally of a large tank containing water, in which the excess steam produced in the boiler house during times of light steam demand is stored, while the tank gives off the steam thus stored, when it is needed.

The installation is said to be working very satisfactorily, effecting a considerable saving in fuel.

TRADE PROSPECTS WITH MEXICO.

Canada's influence in Mexico has for years taken the form of branch banks and the financing and management of many industrial and public utility plants.

Major Chisholm, former Canadian Trade Commissioner, stated recently that Mexico is now heading quickly back to her former state of prosperity and presents an exceedingly attractive market for Canadian products.

Mexico should be added to the list of foreign markets made available through the operation of the Canadian Merchant Marine. As a matter of fact, the Canadian National Railways Management has sent a special representative to make an investigation of traffic conditions there in respect to services on both the east and west coast. Canadians are well regarded in Mexico, and it only needs the practice of salesmanship and proper shipping facilities to establish very extensive and profitable trade in natural and manufactured products of the two countries.

Life is too short to remember unpleasant things.

Scandinavian American Trading Co.

50 E. 42nd STREET
TELEPHONES 8311 8312 1813 MURRAY HILL
NEW YORK

We are always in the market and ready to pay good prices for
SULPHITES
Bleached and unbleached of Canadian manufacture. Write and let us show you what we can do.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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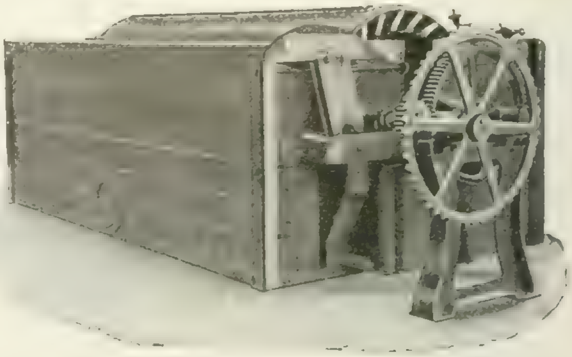

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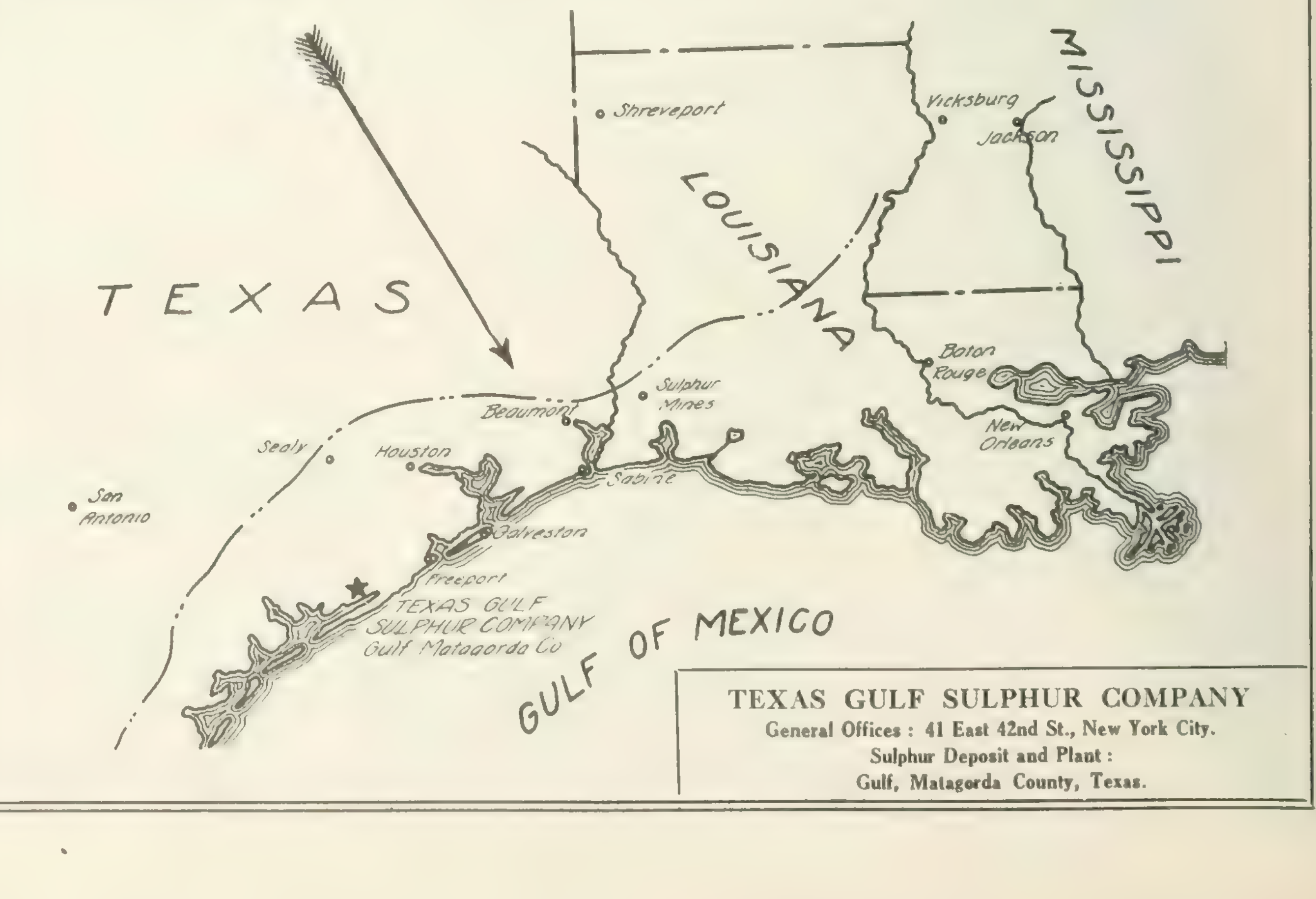

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EDITORIAL

A NOBLE LIFE.

The name of Sir Arthur Pearson and the noble life that he has so efficiently and unstintingly poured out in the cause of those afflicted with blindness, is known throughout the civilized world. Sir Arthur had already made an enviable record as a successful publisher and was in the midst of an unusually active business career when in middle life he became aware that he was doomed to total blindness. With the courage and cheerfulness quite in keeping with other qualities of his great character, he began to apply himself to the mastery of the Braille text so that he might devote his unusual abilities to the aleviation of the disadvantages and the discouragement of others likewise afflicted. When the dark days came, Sir Arthur was prepared financially, mentally and spiritually to begin the work which has really been his greatest contribution to his time and a contribution we may say, that could hardly be surpassed by any human effort.

With his great organizing ability, his kindly disposition, and his undaunted courage, Sir Arthur Pearson has accomplished a work which is of the greatest possible benefit to his fellow sufferers. Sir Arthur's idea was not to endow retreats where blind people could sit in idleness and comparative comfort, shut out from the world, simply to await their end; he had a nobler conception, and thousands will thank him for the success which has met his efforts to establish, or to assist in organizing, schools where the blind could not only learn to read but where they could learn to perform many manual duties and thus make themselves not only self-supporting, but actually agents contributing to the welfare of their fellow men. There are many in Canada who are indebted to Sir Arthur for much of the measure of cheerfulness and hope and content which is now theirs. There are many throughout the world who are now feeling the pangs of grief and loss in the death of this real nobleman who through an unusual accident, is now no longer able to guide and council those who are devoting themselves to the assistance of the sightless.

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PAPER WEEK IN MONTREAL

January 23-27, 1922

Canadian Pulp and Paper Association and its Affiliated Bodies

Formal Programs and Invitations now in preparation

THE AUSTRALIAN TARIFF.

On another page of this issue is an interview which deals with the situation in Australia, particularly as regards the tariff. It is quite evident that the tariff imposed by the Australian Government is so drawn that Canadian mills are given a distinct advantage over Scandinavian and Japanese producers, although British mills have the benefit of perhaps undue preference. It is a bit unfortunate that unavoidable occurrances of the war period should be revived in connection with this measure and we are inclined to think that the Australian Government have attempted to be as generous in the matter as they felt they could afford. We believe it is about time for our industry to consider competition in foreign markets purely on the basis of efficient economical production with due consideration for the protection of our natural resources and to depend less on preferential tariffs, no matter how acceptable such considerations are. We consider it largely a matter of self-protection for the various parts of the Empire to inaugurate graduated tariffs with respect to imports from other parts of the Empire as compared with other countries. There is undoubtedly a certain satisfaction in doing business with ones friends and relatives and with one's brothers-in-arms. While it may have been possible, and may yet be both possible and desirable to agitate for a greater preference for Canada's newsprint in the Australian market, it would seem that that is a matter largely for the Australians themselves to argue in order that their supplies may be cheaper rather than that additional profit may accrue to someone else

The object of their tariff is to provide revenue. especially in this case, where there is no paper industry needing protection.

If Canadian mills cannot make paper more cheaply than their British competitors and within $15 a ton of the production cost to the Scandinavians and Japanese. there is quite evidently something wrong with our methods of manufacturing and distributing newsprint. Our chief obstacle is the blind manner in which our mills have deliberately increased the cost of their wood by careless logging methods.

MAKING USE OF THE TEXTBOOKS.

One of the most encouraging bits of information reaching us for sometime, is the following quotation from a letter received by the Secretary of the Joint International Committee on Education which has charge of the preparation of the Text Books. It comes from Mr. A. D. Wood of the Champion Fibre Company, Canton, North Carolina. Some months ago a reference was made to the proposed plan of co-operation between the Champion Fibre Company, the town of Canton, the State of North Carolina and the Federal Board for Vocational Education. Since then, as will be seen, a number of classes have been successfully started, at least one of which is in charge of a representative of the Federal Board. This class, in Foreman Training, covers a subject which is of vital importance to the successful operation of any industrial plant and aims to educate the foreman and instruct him in his duties as an administrator. It will be seen that such instruction is not within the scope of the text books, the aim of which is to assist in the education of men in the Pulp and Paper Industry along the line of manufacturing operations. It is very encouraging indeed to have such a good report of the work which is being done at Canton and we are sure that readers of the Pulp and Paper Magazine will look forward with interest for the more extensive explanation of the work which Mr. Wood has now in preparation.

"Relative to the foreman training course, of which you wrote me on October 10th, I know you will be pleased to learn that the class was started on the 7th of November, as scheduled, with an enrollment of fifteen foremen, under Mr. Cushman of the Federal Board, and that at this time we find that there is great enthusiasm among the members of the class. I might go a step further and state that everybody is enthusiastic about the work which is being done.

You wrote me concerning the making of a report of the proceedings and am glad to report that through the co-operation of Mr. Cushman (he may tell you that a part is due to the fact that we are all co-operating with him) I hope to be able to send within a week or ten days a mimeograph report of the proceedings of each session, together with graphic charts made by the men themselves during the sessions, and a summary of the work.

The class meets each day at 9.00 a.m. at the Champion "Y" in one of the classrooms and the session lasts until 12.00 p.m. Mr. Cushman meets with the superintendents at 1.00 p.m. and is with us until 2.00 p.m. during which time he gives us a review of the work which is being carried on at the Foremen's Class. He then goes into a session with the foremen which lasts until 5.00 p.m.

It is a strange thing that these men, foremen accustomed to active work in the mill, are leaving their daily session of six hours and many of them are going home and typing and making charts of the day's lessons. At five in the afternoon they seem to be full of pep and eager to go on. This class is the only one which is being carried on on "Company Time."

We had a picture of the class yesterday and if the proofs are o. k. will send you one. I am also planning to have photos taken of the other thirteen classes which meet at the "Y" in the evenings. Among these we have two classes in Pulp Making and two in Paper Making, using T.A.P.P.I. textbooks. It may interest you to learn that instead of confining ourselves to the use of the textbooks, which to the beginner is simply a course in arithmetic, that we divide the session into two three quarter hour periods, devoting half the time to the study of the books and the other three quarters of an hour to a lecture and discussion on some phase of mill work. So far this term I have managed to keep my class interested in this way and I think the other teachers find that this is the best way to hold the interest of the pupil.

Ever since you and the other members of the Committee invited me to join you I have been puzzling my mind, wondering how I could be of real service, and it is gratifying to me to have this opportunity of reporting on the progress of this work. Any suggestion you may make will be gratefully received."

SAW WOOD.

The old injunction to "say nothing, but saw wood", is a good motto. It applies as a distinct compliment to the Forestry Departments of New Brunswick and Ontario. These governments have wisely decided to help the unemployment situation by providing work in the woods on Crown lands, cutting pulp-wood and lumber. This plan has the great advantage of putting charity on a "return value" basis and really investing money in labor which will convert a dead resource into a live asset, even though a good demand for it is not likely to develope for a year. Wood so cut should not be dumped on the market, however.

VISIT TO CRABTREE MILLS.

The editor of the Pulp and Paper Magazine, accompanied by Mr. Archibald of the Harland Engineering Co. visited Crabtree Mills last Friday. Mr. Kay Crabtree escorted them through the mill and described the large amount of new construction which has recently been completed, making this plant of the Howard Smith Paper Mills a most efficient unit. An excellent grade of sulphite bonds and litho paper is produced. The Harland sectional paper machine drive was seen in operation, giving complete satisfaction. It was taking less than 60 H.P. to run the 90" machine. Provision has been made for the installation of a groundwood mill in the future.

"The weight of a cloud a mile high and two miles in diameter has been estimated at 200,000 tons." No wonder the clouds that recently hung over business caused a depression.

The Manufacture of Pulp by Means of Chlorine

UMBERTO POMILIO.

(Translated from CHIMIE ET INDUSTRIE, 6, 267-275, September, 1921, by A. Papineau Couture).

The process of extracting cellulose from plant materials by means of chlorine on a laboratory scale has been brought to a high degree of perfection.

Cellulose is found in very considerable quantities in the vegetable kingdom, as it is the main constituent of plants. It occurs along with other organic bodies of different constitution, namely, vasculose or ligno-cellulose, pectose or pecto-cellulose, and cutose.

Cellulose is relatively inert chemically. It resists fairly well the action of various chemicals; it does not give addition products with the halogens, it resists to a certain extent the action of alkalis and of acids, and also the hydrolyzing effects of oxidizing agents.

On the other hand vasculose, pectose, and cutose are attacked by a certain number of reagents which have little or no action on cellulose.

Three methods have been proposed for the extraction of cellulose from plant materials:

(1) Treatment with caustic soda;
(2) Treatment with bisulphites;
(3) Treatment with an oxidizing agent and then with alkali.

From a purely theoretical point of view the last of these is the best. Cross and Bevan in their **Text Book of Paper Making** (1920, p.4) give the following method for the separation and determination of cellulose:

"(a) The fibrous raw material is boiled with a dilute solution of sodium hydroxide (1-2p.c. NaOH), and, after thorough washing, is (b) exposed in the moist state to an atmosphere of chlorine gas;

(c) It is again treated with boiling alkaline solution.

By such treatment of the majority of vegetable tissues, the "non-cellulose" constituents are removed, and a residue of cellulose obtained. A slight treatment with a bleaching agent, to remove residues of colored impurities, and a final washing with alcohol and ether, complete the purification, and the cellulose is obtained as a mass of ultimate fibers of pure white color, more or less translucent."

With respect to ligno cellulose, which is the most important of the substances which the pulp manufacturer must get rid of, the same authors say (pages 61, 62, 63):

"Ligno-cellulose is differentiated from the celluloses by the following characteristic reactions.......

"But the most characteristic of its reactions is that of direct combination with the halogen elements, and notably chlorine. The combination is attended with change of color to bright yellow; the yellow quinone chloride is dissolved by a solution of sodium sulphite, with development of a magenta red coloration.

"While serving thus as a qualitative reaction for the identification of the ligno-cellulose, it is also one which takes place in definitely quantitative proportions. ....

"From its critical importance, the process of chlorination of the jute ligno-cellulose will be described in detail. The fiber is prepared by a preliminary treatment with a boiling solution of sodium hydrate (1 p.c. NaOH). From this it is well washed and squeezed to retain not more than its own weight of water. In this condition it is exposed for one hour to an atmosphere of washed chlorine gas. The fully chlorinated fiber is washed to remove the hydrochloric acid formed in the reaction, and transferred to a solution of the sulphite 1-2 p.c. sodium sulphite) in which it is boiled. To complete the isolation of the cellulose, the solution is made alkaline with sodium hydrate (0.2 p.c. NaOH), after which the boiling is continued 2-3 minutes. The fibrous mass is thrown on a cloth filter and washed thoroughly. This residue is the most pure **cellulose**; and the entire elimination of the non-cellulose components of the original fiber is shown by failure to react with the various reagents previously cited.

"The following are important quantitative data. The yellow chlorinated derivative has the empirical formula $C_{19}H_{18}Cl_4O_9$; to form this derivative the fiber substance (purified and prepared by the boiling with alkali) takes up 8% of its weight in **combination**; at the same time an equal amount goes to form hydrochloric acid. The proportion of cellulose yielded is approximately 73-80%, according to the quality (and purity) of the fiber. This cellulose is a mixture of two celluloses — **alpha-cellulose**, resembling the normal cotton cellulose, and **beta-cellulose**, a furfural-yielding

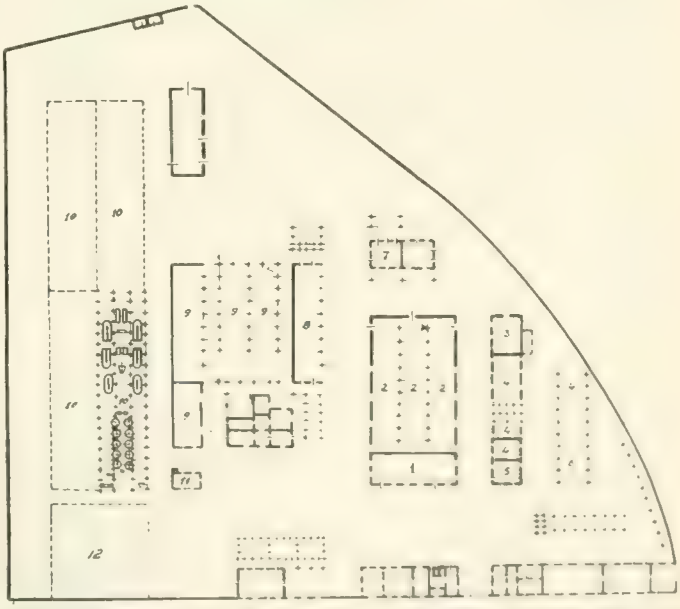

Fig. 1 Plant of the Elettrochimica Pomilio, Naples, for the Manufacture of Caustic Soda, Chlorine, and Pulp.
1. Electric Power Station.
2. Electrolytic Cell Room.
3. Salt Storage.
4. Electric Evaporator and Caustic Fusion Pot.
5. Chlorine Liquifying Plant.
6. Javelle Water (Sodium Hypochlorite Solution).
7. Hydrogen Compressor.
8. Synthetic Hydrochloric Acid.
9. Bleaching Powder.
10. Cellulose.
11. Boilers.
12. Storage for Hemp Stalks.

cellulose—and much less resistant to hydrolytic treatments, both acid and alkaline. In other processes of attacking the fiber for the isolation of cellulose, this latter is hydrolyzed and dissolved and the yield falls to 62-66%."

On page 71 of the above mentioned treatise; the authors insist on the fact that the chlorination method is the most suitable and the most perfect for the separation of cellulose in the laboratory. They also make mention of two other methods, one of them being based on the action of dilute nitric acid at 60° to 80°C. But they add that these methods are not used industrially.

The main reason is the excessive cost of these reagents. But it must not be forgotten that the authors are English. In England there is no great production of electrolytic chlorine, and hence the manufacturers are not faced with the problem of disposing of the chlorine produced in the preparation of electrolytic soda. A large proportion of their caustic soda is produced from sodium carbonate by the old Leblanc process, and chlorine is mostly produced chemically from hydrochloric acid. It is evident that under such conditions the high cost of chlorine must be taken into account when it is to be used for such purposes as the separation of cellulose; for this necessitates the use of liquid chlorine in drums or cylinders, which is more expensive than moist chlorine gas.

On the other hand, the opinion of the authors with respect to processes based on the action of such oxidizing agents as nitric acid is entirely warranted.

As far as cutose is concerned, the authors consider that the chlorination method is the only one which can effect a complete separation of the cellulose of flax. They show that the cuticular tissues of flax contain a considerable amount of amino compounds which react readily with chlorine, yielding characteristic chloro-amino-derivatives. The chlorination method is therefore the standard laboratory method for the accurate determination of the cellulose content of plant materials. It is the most perfect and it gives the maximum yield, provided it is properly carried out.

Numerous attempts have been made to apply this method to commercial operations. Cross and Bevan themselves describe a process for preparing straw pulp by means of chlorine gas. They state the yield is appreciably higher than by the soda process, and they admit that the chlorine cellulose is purer than soda cellulose. But the chlorine used was prepared by the oxidation of hydrochloric acid by means of manganese dioxide, which rendered the process too costly.

Owing to the high quality of the chlorine cellulose, and owing to the fact that the process would probably give theoretical yields, a large number of technicians attempted the application of this process to large scale operations. Kellner patented the use of electrolytic chlorine for the preparation of pure cellulose; but his process consisted in the preparation of cellulose by means of an alkaline hypochlorite produced *in situ* rather than by means of chlorine gas. William Mather also devised and proposed an apparatus for the manufacture of chlorine cellulose. In different countries various solutions of the problem have been suggested; but, as far as we are aware, when they were tried out commercially they were either incomplete or too complicated to be practical.

In Italy Beniamino Cataldi tackled the problem experimentally, but on a commercial scale. In 1916 he obtained an Italian patent covering the use of chlorine for the manufacture of pulp. The corresponding French patent (No. 492,222) delivered on September 9, 1916, makes the following claims:

"(1) A chemical process for the extraction of cellulose from vegetable fibers, such as wood, cotton, straw, esparto, etc., characterized by the fact that the wood is previously decorticated and chipped by suitable machines in the usual manner, while if other vegetable fibers are used these are previously crushed. The prepared material is charged into autoclaves which are lined with acid-proof brick, and is cooked in a weak

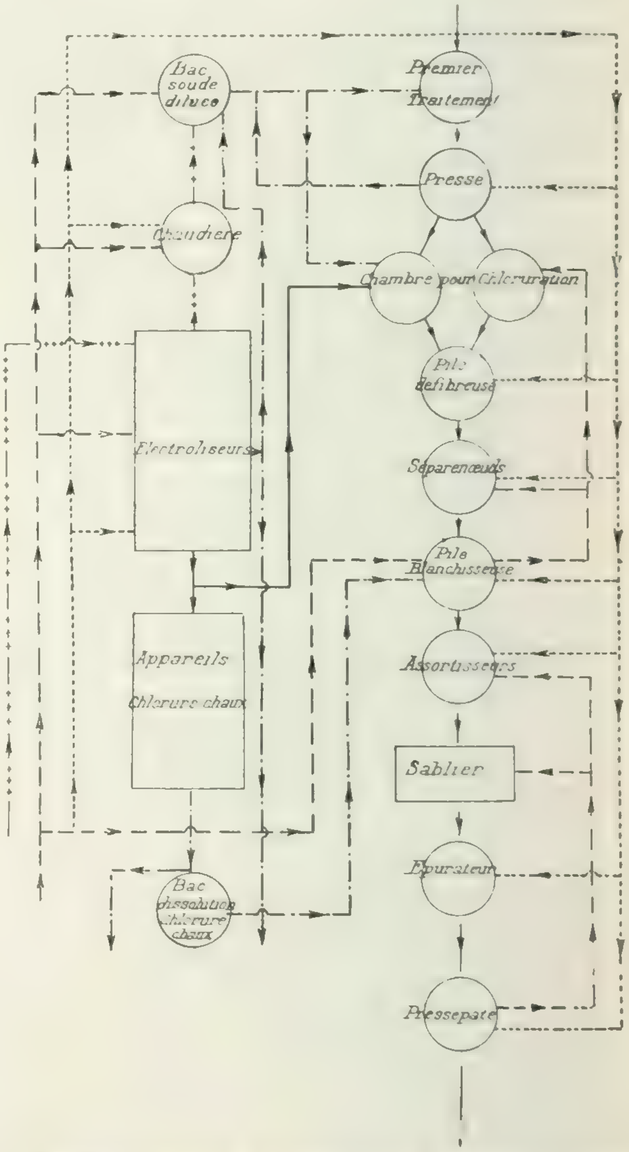

Fig. 2—Diagram showing the production of cellulose by means of chlorine.

Caustic soda – - ' – – -
Water —— ——
Electric wiring - - - - - -
Chlorine Gas — ———— - — -
Bleaching powder solution ——.——
Steam -x - -
Hydrogen xx - -
NaCl solution — xxx -
Bac de soude diluée—Tank for Dilute Soda.
Chaudière—Boiler.
Electroliseurs—Electrolytic Cells.
Appareils Chlorure de Chaux—Apparatus for making Bleaching Powder.
Bac Dissolution Chlorure de Chaux—Tank for Dissolving Bleaching Powder.
Premier Treatment—First Treatment.
Presse—Press.
Chambre pour Chloruration—Chlorinating Chambers.
Pile Défibreuses—Defibering Engine.
Assortisseurs—Classifiers.
Sablier—Sand Trap.
Euprateur—Screen.
Presse Pâte—Wet Machine

alkaline liquor for a greater or less length of time according to the concentration of the liquor. After removing the liquor from the autoclaves, they are put under a vacuum of 50-65 cm., and then chlorine gas is introduced until the vacuum indicator registers zero; and the wood or other material is acted upon for one or more hours according to the nature of the fiber which is being treated. After the chlorine treatment the wood is washed with pure water and is given a second alkaline treatment identical with the first, but slightly shorter, which completely eliminates all incrusting matters and impurities from the material under treatment and yields a pulp which is washed, purified, and ultimately bleached in a weak solution of sodium or calcium hypochlorite.

"(2) A modification in the separation of cellulose from cotton, jute, and similar vegetable fibers, whereby the water absorbed by the fibers in the first alkaline treatment by means of hydro-extractors (centrifuges) before subjecting the fibers to the action of the chlorine."

A few additional patents were also taken out on the subject. As the tests gave encouraging results, a company was formed to work the patents obtained. It built in Northern Italy a mill which was completed in 1916. The process used was based on the experience acquired in carrying out the preliminary experiments; but there were numerous difficulties entirely apart from the theoretical principle on which the process was based, which cropped up and were successfully overcome.

Perfectly white wood pulp (balsam, poplar, willow, etc.) has been prepared in this mill. Straws (wheat, rice, etc.) have also been treated. And at the present time it turns out several tons of poplar pulp a week. The working of the process on a commercial scale for the last four years has shown conclusively that theoretical yields can be obtained; but at first the results were but indifferently good, in spite of the fact that the laboratory tests had given a yield of 100% of the cellulose available in the plant.

The poplar cellulose which is now prepared is pure and very white. It is sold to several paper mills. The quality of the pulp is so good that it sells for about 20% more than soda pulp prepared from the same wood.

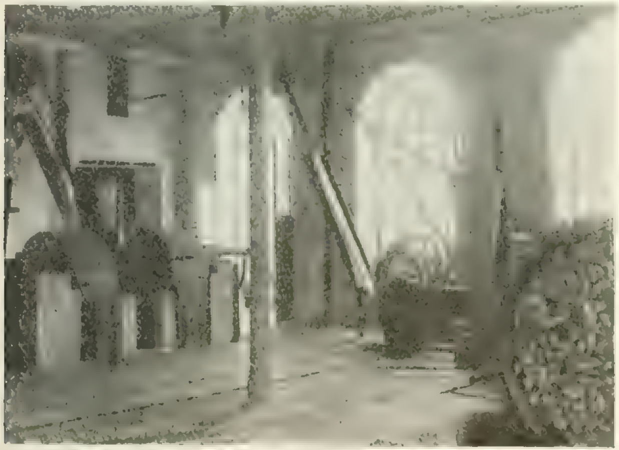
Fig. 3—From left to right: Chipper, Vacuum Pump, and Autoclave for impregnating the wood.

The poor yields which had been obtained so far in the commercial treatment of plants by chlorine were due to the reaction of the chlorine on the non-cellulose constituents of the plants according to the following general equations:

$$Cl_2 + R.H = H.Cl + R.Cl$$
$$Cl_2 + H_2O + R.COH = 2HCl + R.CO_2H$$

These two reactions take place at the ordinary temperature and are exothermic. Moreover as is seen, they give rise to the formation of large amounts of hydrochloric acid. It is thus seen that the most favorable conditions of temperature and reaction medium under which treatment is started, disappear when large masses of vegetable matter are treated with chlorine, for the temperature rises and the hydrochloric acid formed attacks and destroys the cellulose. The compounds of general formula R.Cl or R.COOH, which are obtained from the non-cellulosic constituents are for the most part insoluble and must be eliminated by transforming them into the corresponding sodium salts and washing thoroughly.

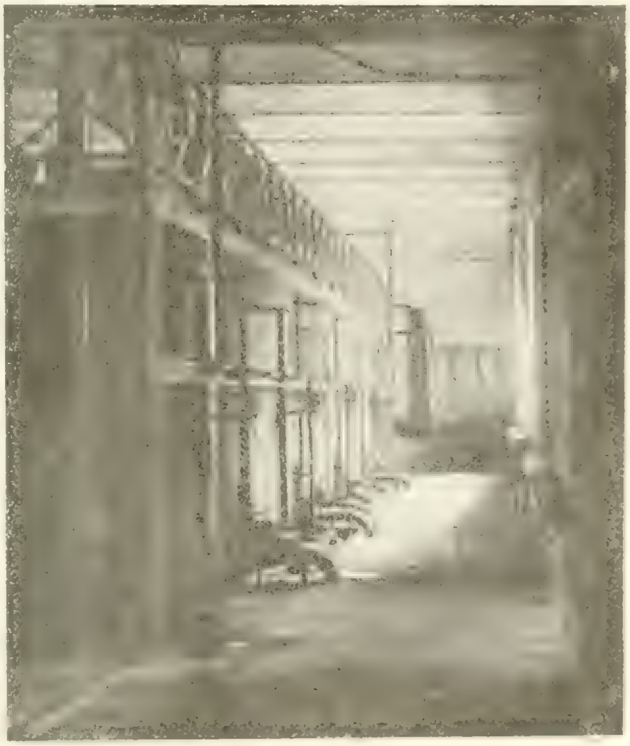
Fig. 1—Battery of concrete chlorinating autoclaves

In 1919 the "Elettrochimica Pomilio" company decided to work this process in its electrolytic chlorine plant at Naples. A first unit having a capacity of 10 tons a day is almost completed (See Fig. 1) and provision has been made for doubling or quadrupling the production if desired. The chlorine will be used in the gaseous form directly as it comes from the electrolytic cells, for the treatment of the following materials: poplar, Lybian esparto, but especially hemp and hemp waste.

Hemp is extensively cultivated in Southern Italy. It does not yield a pure white cellulose by the alkaline processes, and yet hemp cellulose is very interesting, as shown by the following extract from the official report of the **R. Stanzione Sperimentale per lo Studio della Carta delle Fibre Tessili**, of Milan, on paper pulp obtained directly by chlorination of hemp stalks.

"This process has completely eliminated the ligneous material which was present in the hemp stalks, for the cellulose obtained does not give any reactions with the usual reagents for the identification of ligneous fibers: phloroglucinol, aniline sulphate. Microchemical reactions also prove the absence of lignin in this cellulose. The purified fiber is colored grey by a solution of iodine in potassium iodide, and blue by chloriodide of zinc. These reactions are characteristic of chemical pulps which have been completely purified of all incrustants.

"If the hemp cellulose is treated for 30 minutes with a cold 17.5% caustic coda colution, there remains 71% of unattacked material, while 29% is converted into hemi-cellulose soluble in caustic soda.

"The sheets of paper prepared from this pulp were particularly rigid, and possessed a pronounced translucency.

(Signed)' CAMILLIO LEVI, Milan,
(Dec. 10, 1920)."

If the hemp stalks had been subjected to the soda treatment, a considerable proportion of the cellulose would have been lost by being converted into soluble hemi-cellulose.

Theoretically the new chlorination process for the preparation of pulp is the simplest. The chemical processes involved consists essentially in:

(1) Soaking with a dilute caustic soda solution;
(2) Acting upon it with chlorine gas;
(3) Washing with a weak alkaline solution.

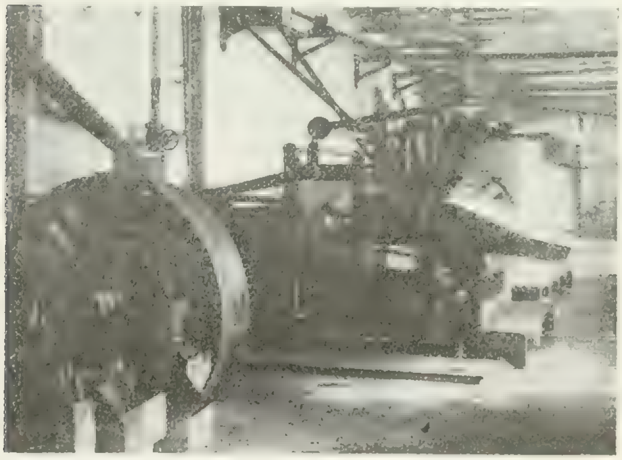

Fig. 5—Wet machine and pile of chlorine poplar pulp.

The mechanical operations required are about the same as in other processes: defibering, screening, bleaching, making into sheets, drying. (See Fig. 2.)

The originality of the process lies in the fact that the various chemical operations which are employed can be controlled and regulated. The chlorination, for instance, is very easily regulated. It follows that one can control the speed of the reaction, the temperature of the mixture, and the concentration of hydrochloric acid. The various conditions can thus be maintained very close to the optimum conditions of the reaction.

The commercial preparation of 100 kilos of poplar pulp requires:

Moist chlorine gas	28 kilos
Coal (or its equivalent in other fuel)	16 "
Bleaching powder	6 "
100% caustic soda (as a 5% solution)	5 "

These figures will naturally vary with the amount of cellulose contained in the material under treatment: the higher the cellulose content, the lower the consumption of chemicals.

The above figures correspond to a minimum consumption of caustic and to a maximum consumption of chlorine. As the latter is produced electrolytically, and an excess is nearly always available, it is advisable to utilize as much of it as possible. However, if desirable the pulp manufacturer can reduce the amount of chlorine and increase the soda consumption. In other words, the amounts of chlorine and of caustic used may be varied in opposite directions according to the market prices of these commodities.

Laboratory and mill-scale tests have shown that the caustic can be replaced by an equivalent amount of quick lime.

A production of 10 tons of cellulose per 24 hours requires a force of 50 men (three shifts), and about 80 kilowatts for the mechanical operation.

The usual fixed or rotary digesters, with or without forced circulation, have been replaced by cylindrical tanks for the alkaline treatment and chlorination chambers, equipped with special piping and valves. The steam plant is reduced to one-tenth of that required for the soda process. The soda recovery plant is entirely eliminated. Defibering and disincrustation are very easily carried out, and the same is true of bleaching. The water consumption is the same as for the other processes. The waste waters are easily disposed of; but it is advisable to make provision for means for the full neutralization of the hydrochloric acid, say by discharging the waste waters from the chlorination apparatus onto a bed of limestone. Except for a few details in the mechanical equipment, a given equipment can produce pulp from various kinds of wood, straw esparto, or any other suitable raw material.

A building one story high and having an area of 1,500 square meters can house the equipment required for the production of 10 tons of finished pulp per 24 hours, exclusive of storage space.

In my estimation the chlorine gas process for the preparation of pulp is the most economical. Henri de Montessus de Ballore in his book on ESPARTO AND ESPARTO PAPERS (**"Alfa et Paper d'Alfa"**), and his other book on the MANUFACTURE OF PAPER PULPS OTHER THAN WOOD PULP (**"Fabrication des Celluloses de Papeterie autres que celle du Bois"**) (1919) gives the following figures for the manufacture of 100 kilos of chemical esparto pulp:

Esparto (yield 45%)	222.00 kilos
Coal	150.00 "
Soda Ash	22.22 "
Lime	26.66 "
Bleaching Powder	17.75 "
Sulphuric Acid	1 liter

The amount of soda ash used is really greater than 44 kilos; but 75% of it is recovered and the cost of salt is about one-third that of soda ash. It is on these data that the consumption of 22.22 kilos of soda ash is based.

The following figures were obtained from an Italian straw sulphate mill:

Wheat Straw	320 kilos
Coal	180 "
Soda Ash	20 "
Sodium Sulphate	32 "
Lime	34 "
Bleaching Powder	20 "
Sulphuric Acid	1 liter

These figures show a yield of only 31% as against 46-47% obtained in the laboratory by Muller.

The consumption of the various materials in the commercial preparation of 100 kilos of chlorine pulp from straw are as follows:

Straw	266 kilos
Chlorine	28 "

Coal	15	"
Bleaching Powder	6	"
Caustic Soda	,5	"

If the figures for the different processes are compared, it is seen that the coal consumption for the chlorine process is reduced by 90%, that of soda 75%, and of bleaching powder 67%. The consumption of the vegetable raw material is also reduced by about 20%. The use of lime is entirely eliminated; but on the other hand 28 kilos of moist chlorine gas are required. The cost of the chlorine will depend on the manner in which it is used: if it is used directly as it comes from the cells, it costs but a fraction of what liquid chlorine in cylinders would cost. At any rate, the cost of the chlorine required is small as compared with the saving in coal and soda consumption.

To this lower cost of raw materials must be added a saving of 50% on the first cost of the plant. These figures are naturally subject to variations according to the economic conditions in various countries.

This method of utilizing chlorine furnshes a very satisfactory solution to the problem of the over-production of chlorine. In his book on ELECTROLYTIC SODA (**"La Soude Electrolytique"**) A. Brochet states (page 9), "When electrolytic soda was first proposed, the question immediately arose what will be done with the chlorine?"; and on page 11, "But if the ammonia process has been able to compete for so long with the Leblanc process in spite of the fact it was not helped out by chlorine, the electrolytic process does not seem to be in the same position, at least at present, and it is necessary that chlorine, in some form or other, should bear its share and help to maintain the balance." If electrolytic chlorine can be produced at a reasonable cost and find a ready market, electrolytic soda will be in a position to compete with Leblanc soda and with Solvay soda.

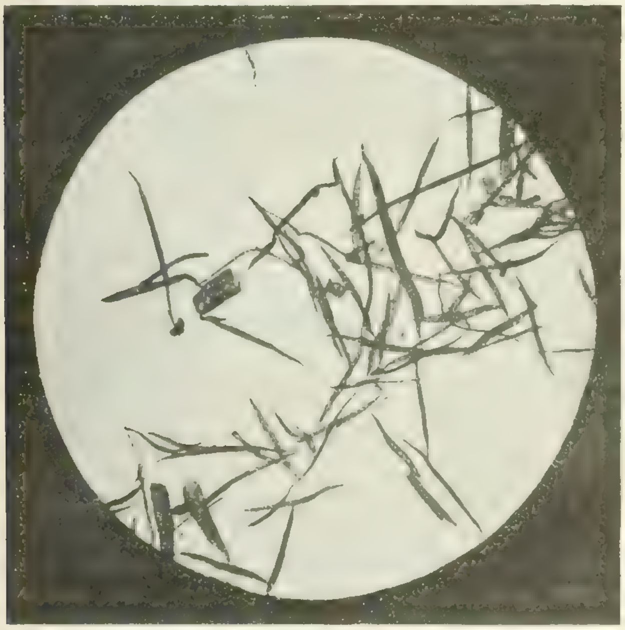

Fig. 6—Microphotograph of hemp stalk pulp.

The most important chlorine compound, from a commercial point of view, is bleaching powder or chloride of lime. But the demand for this product is not sufficiently great to absorb all the overproduction of chlorine nor to raise the sale price. In the book already mentioned, Montessus de Ballore (page 76) says of electrolytic soda: "The fact that this industry has not developed as had at first been expected that the chlorine would find a ready market in the form of bleaching powder; but the market for this product is very limited, and as the production of a ton of soda corresponds to the production of 2.25 tons of chloride of lime the market for this product was soon glutted and prices slumped."

The problem of the over-production of chlorine still exists, and some large chlorine plants erected during the war are eagerly seeking some new outlet for their product.

The manufacture of chlorine pulp which can use up to 50% of its weight of chlorine, affords an almost unlimited market, and would thus seem to give the true solution of the problem.

In countries where water powers are available, the raw materials required are sodium chloride and suitable plants, that is, the materials required for the manufacture of chlorine, soda, and cellulose. The production of pulp by this process will be suitable whereever there is a large market for the soda produced. The importance of such a process is all the more evident, as the soda and pulp industries have been seriously menaced by the fuel shortage.

It is therefore highly advisable for electrolytic chlorine plants to adopt the chlorine gas process of pulp manufacture, as has been done by the "Elettrochimica Pomilio." They should not, however, attempt to make a pure bleached pulp, unless they have a plentiful supply of pure water. But there is nothing to hinder them from making a half-stuff by eliminating the non-cellulosic constituents of the plants by chlorination and washing with alkali. The only operations which would then have to be carried out would be lixiviation, chlorination, alkaline washing, which could be effected by using both the chlorine and the alkaline liquor directly as they come from the cells. Such a pulp could easily find a market with paper mills which possess the required equipment for defibering and bleaching.

On the other hand, the process can readily be adapted to existing pulp mills. As all the larger pulp mills have electrolytic cells for preparing of their own chlorine and towers for the preparation of their bleach liquors it would be easy to expand existing equipment and to construct chlorination chambers for the treatment of the plant materials. Under these conditions the lixiviation and the soda recovery plants would become useless. There would merely be required multiple-effect evaporators for the concentration of the cathode effluent from the increased number of cells, so as to adjust the concentration of the electrolytic soda solution.

The **"Elettrochimica Pomilio"** is at present conducting experiments on the recovery of the hydrochloric acid and of the chlorinated derivatives formed by the action of the chlorine on the non-cellulose constituents of the plants, and is endeavoring to find commercial uses for these by-products. In certain cases the recovery of these by-products may be of great importance. A judicious use of the raw materials together with a systematic recovery of by-products can give very satisfactory results from the point of view of economy.

TIMBER LIMIT SOLD.

Vancouver, Dec. 8.—Alex McLaren of Buckingham, Quebec today sold a timber limit at Chilliwack to Westminster Mills for $600,000. The property has been held by the McLaren family for 32 years. Mr. McLaren still has extensive holdings in Vancouver Island.

Fractional Boiling of Grasses*

By Major J. EDINGTON AITKEN.

The separation of fiber of esparto from the affiliated ingredients with which the cell wall and canals of the plant are incorporated is — as far as possible — effected in the boiling stage of the manufacturing process. The fiber or cellulose is relatively resistant to the action of chemical reagents, which have the effect of forming soluble compounds with the non-cellulose constituents of the growing plant, and which persist after harvesting and drying. The removal of these substances from the desired and required fiber is effected by subjecting the esparto to the action of an alkali, in a suitable type of boiler, constructed in such a manner as will enable the alkaline liquor to act uniformly upon the esparto.

These initial sentences have something of a text-book savour, but it is necessary that we should state bare facts before proceeding to construct a scheme of treatment which is capable of yielding the best results at a minimum of cost.

Noncellulose Constituents of Plants.

The non-cellulose constituents of plants in general, and — from the papermakers' point of view — esparto in particular, are divided into three groups:

1. Starches, and similar compounds.
2. Pectoses.
3. Lignins.

The members of each group possess different degrees of solubility and affinity for chemical reagents. The starches and affiliated compounds are soluble in boiling water. The pectoses form soluble compounds with weak alkali, which are thereafter soluble in boiling water. The lignins are much more resistant, requiring drastic treatment with a strong alkali and a higher temperature.

In general practice, the papermaker carries out the three reactions at the same time, thus effecting *more or less* complete resolution in one operation; which naturally appears to be the acme of economy. This economy, however, is only apparent, though it is based upon the grandmotherly advice not to make three bites of a cherry. If we take only one bite, the chances are that we will swallow the pip, which misfortune might easily lead to injurious results. In making one stage of the process of esparto boiling, we get, as I have just stated, a *more or less* complete resolution, but, as I shall indicate later, the result of one part of the digestion can, and generally does, act injuriously upon another, thus the removal of the products of the boiling process become considerably *more or less* incomplete; and we do not obtain the same assured success as is possible if the boiling is fractionated.

Treatment Required in Boiling.

Some years ago I made a considerable number of experiments with the object of ascertaining the relative degree of treatment required in boiling, for the reduction and solution of those non-celulose constituents, and the possibility of making them applicable to the manufacturing scale.

William Raitt, cellulose expert to the Indian government, was working on a similar scheme, and we discussed the subject together at considerable length, with reference to its applicability both to bamboo and esparto. It is most gratifying to know that Mr. Raitt has been successful in treating bamboo on the commercial scale by fractional digestion, and that many of the difficulties hitherto encountered have been overcome.

It is no doubt largely owing to the fact that esparto is infinitely more amenable to treatment than bamboo that we have not modified the process, even though there were indications of attaining greater economy and purity of product.

The object of fractional boiling is to remove members of the starch and pectose groups, before giving the more drastic treatment required by the lignins.

The dark color of "black liquor" from esparto boiling is caused by the presence of compounds of the first two groups. The solution of lignin is of a pale amber color. Thus when esparto is furnished into a boiler containing its full complement of caustic soda, the liquor immediately assumes a very dark color, indicative of rapid combination and ready solubility of the starch and pectose compounds and their associates.

Structure and Constituents of the Plants.

In order to appreciate the details in the process of esparto boiling, it is desirable that we should possess a certain knowledge of the morphology of the plant; this need not be extensive, but at least sufficient to enable us to understand the relationship which the non-cellulose constituents bear to one another, and to the cell wall or fiber, the desired requirement of the papermaker.

The synonomous expressions "non-cellulose" or "non-fibrous" are considered sufficiently comprehensive for the purpose of the papermaker, as they signify those constituents of the plant which must be removed before cellulose or fiber can be amenable to subsequent process treatment. These non-cellulose constituents are not byproducts formed during the growth of the plant, but are significant of the progressive stages carried on in the digestive and productive systems of the plant; thus we find the early formation of starches and similar substances easily assimilated during active growth. Then follows further elaboration and the formation of more complex constituents, namely those of the second or pectose group, still closely related to the starches from which they have been derived.

Cell Walls or Cellulose.

The next step in the building up of the plant structure, brings us to the real object of interest from the papermaker's point of view. It is essential that the plant shall develop means whereby nourishment may be conveyed to the centres of growth, and that these highways shall possess strength and stability. To attain this object the pectoses become further elaborated and canals are constructed for the transport of nourishment. The walls surrounding these canals are extremely fragile, therefore, and, according to requirements, are proportionately impregnated with a strengthening and binding material, called lignin. The cell wall is the objective of the papermaker, and in order to obtain it in a pure condition he must remove those substances with which it is incorporated. In these remarks I have touched upon a subject of much interest, without attempting to enter into botanical detail.

Varying Proportions of Lignin.

In order to separate these non-cellulose constituents in the process of manufacture, certain degrees of treatment must be employed according to the facility with which each substance or group enters into combination with the boiling agent, and is dissolved by water.

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*Read at Edinburgh meeting of the Technical Section of the Papermakers' Association of Great Britain and Ireland, September 21, 1921.

It may be observed that according to the greater degree of stability required in a plant, there is a proportionate increase in the development of lignin. Plants which are of perennial growth requiring the maximum of stability, contain the maximum of lignin, which explains the more drastic treatment necessary for the separation of cellulose than is required by plants yielding annual crops.

If esparto grass is boiled in water, it will be observed that the liquid rapidly assumes a dark color, derived from the coloring matter of the plant, and certain intermediate compounds, also members of the starch group, are dissolved. The esparto becomes nearly black. The loss in weight on the air-dried material is approximately 12 percent.

If this water-treated esparto is now boiled in a solution of caustic soda containing 1 to 1.5 percent of the raw grass, the resultant liquor will assume a very dark coloration, and the esparto will be a pale yellow, somewhat higher than the raw grass. The loss in weight during this treatment will be about 25 percent. A total loss in the two digestions of about 37 percent.

Boiling With Weak Alkali.

The esparto obtained from the boiling with weak alkali, although light in color, feels hard and—in all respects except that of color — resembles a very much under-boiled stock. The reason for this is that the cellulose is still closely incorporated with lignin, upon which the weak alkali had no effect. As the cellulose and lignin obtained from this stage are highly resistant to chemical activity, it is necessary to apply the more severe treatment to which I have previously referred, in order to effect their separation.

The next boiling is with a solution of caustic soda containing about 12 percent sodium hydroxide to the weight of raw grass.

The boilings which were effective in removing the starches and pectoses can be conducted at atmospheric pressure. It is now interesting to observe that the third treatment, if carried out at ordinary pressure, has little or no effect beyond a slight softening of the grass. This affords an explanation of the fact that in the early days of esparto boiling an enormous excess of bleach was required. In short, the lignins were bleached out instead of being removed by the boiling process, and the color was not of a high degree of purity or permanence. I am not prepared to state that such conditions are not altogether uncommon today. Have we not heard it said by users of esparto papers, that the shade has "gone back"? It is certainly true that if lignins are only partially oxidized in the bleaching process, instead of being removed, they will, under suitable conditions of exposure, revert and cause degradation of shade. An increase of pressure above that of the atmosphere is essential for the purpose of raising the temperature to the point at which the resolution of the lignins becomes effective. The liquor from this stage of the process has a pale amber color, and the boiled esparto has lighter color than that usually associated with well-washed grass. There will be a further loss in weight of about 5 percent, thus the total losses resulting from the three stages are about 42 percent. It is interesting to note that while about 37 percent of the non-cellulose can be removed with weak alkali and at normal pressure, it is necessary to employ strong alkali and super-pressure in order to accomplish the resolution of 5 percent.

Three independent boilings have been given to the same quantity of esparto, and I think I hear some papermaker remark—"Such a ridiculous round-about process!" Wait a minute, my friend, you generally save time and petrol going round a hill, than by climbing over the summit in low gear." The foregoing description was the equivalent of a demonstration and we may now proceed to apply the process of fractional boiling to the manufacturing scale and method.

The fundamental feature of this process is the fact that the solution of lignin in caustic soda is practically colorless — and here I may mention that the blackness of "spent lye" is absolutely no indication of its strength or efficiency of work done. But the dark color of esparto after boiling by the usual system does establish that the stock has been boiled; but by the fractional method the grass at the corresponding stage is very pale in color.

In commencing this process, esparto is furnished into a boiler containing a solution of caustic soda having 1.5 percent sodium hydroxide to weight of raw grass, or 67 lb. dissolved in 1,700 gallons of water (equal to 0.4 percent solution) to a boiler of three tons capacity. The boiling is continued for about one hour, after which it is drained off. It will be observed that the liquor is of a very dark color, exactly like the ordinary strong "black lye." As this is only the beginning of the process, the liquor may be run to the drain; it is not worth recovery, and will not occur again. The starches and pectoses with their immediate derivatives have been removed, but the lignins are not affected.

Boiling caustic liquor containing about 14 percent sodium hydroxide to the weight of raw grass is now added; approximately equivalent to 941 lbs. dissolved in 1,700 gallons of water, and the boiling resumed at a gauge pressure of 35 to 40 lb. per square inch, equal to boiling point temperatures at 281 deg. to 287 deg. Fahr. for the duration of about three hours—according to grade or quality of esparto, and other contingencies. The liquor from this boiling is of a pale amber color, and as sufficient caustic soda was added to effect solution of the lignins and leave an excess it is available for the first boiling of another furnish of esparto in order to remove the starches and pectoses; thus the same quantity of caustic liquor is employed for both stages in fractional boiling.

The purer cellulose is, the greater affinity it possesses for coloring matter; thus we find under the usual method of boiling esparto that the highly colored liquor is extremely difficult to wash out, and more particularly so if cold water is employed, because it acts as a most effective mordant of the dark color obtained from the solution of the pectose group with which the hot boiled stock is impregnated in the customary all-in-one process.

Difficulty of Washing.

As a rule the difficulty of washing receives little or no consideration; it is taken as a matter of course that the boiled grass must be washed either in the boiler, or in the breaker, or both. The difficulty nevertheless exists.

The lignin which is held in close association with the cell wall in the capacity of a protective, binding and sizing agent, when dissolved by caustic soda, leaves the cellulose in a practically pure state. In presence of the soluble derivatives of the pectose groups, this degree of purity is short lived, as the property which pure unsized cellulose possesses for absorbing color immediately becomes effective, and the grass assumes the dark coloration characteristic of boiled esparto. The difficulty in washing is therefore coincident with the tenacity with which pure cellulose absorbs and retains the dye derived from another part of the process. Thus we are brought back to the statement which I previously made, that when the all-in-one method of boiling is employed, one part of the process acts injuriously upon another. The color of unwashed boiled esparto treated by the fractional process has a decidedly better color than can be obtained by the very best conditions of washing under generally existing circumstances. If we remove those constituents of esparto which are the means of imparting color to the fully boiled material, we eradicate the greatest obstacle to economical bleaching.

It must be borne in mind that while the elimination of the members of the starch and pectose groups can be effected at atmospheric pressure, it is absolutely essential that pressures lower than that which will give a boiling temperature of 265 deg. Fahr. (approximately 138 deg. Cent.) are ineffective in yielding a boiled esparto free from lignin compounds. At this minimum temperature, equivalent to a guage pressure of 24 lbs. per square inch, the time required to effect even an incomplete solution would be increased beyond the limits economical process, if pressure is increased to give the boiling a temperature of approximately 280 deg. Fahr. (130 deg. Cent.) a most marked reduction in time can be accomplished, and fractional boiling will give better and more economical results than can be obtained by the all-in-one system.

In the usual method of esparto boiling, after the "black liquor" has been drained off to the recovery plant, the boiled stock is covered with water, and a second boil of short duration is given; this is for the purpose of removing residual black lye which may still adhere to the boiled esparto. It is customary to run this weak liquor to recovery. It may also be observed that this "scalding" or "first hot wash" is as dark in color as the strong "black lye."

When fractional boiling is adopted this part of the process can be practically eliminated. A relatively small proportion of boiling water may be run into the boiler through the perforated dome; this will be found to be extremely effective in removing most of the soda still adhering to the esparto. As this water after percolating through the mass has only a pale color, it can be satisfactorily used as a diluting water for strong caustic liquor. The total quantity of spent liquor which is sent for recovery is therefore reduced by nearly half, thus effecting a substantial reduction in recovery costs, without depreciation of the percentage of recovered soda.

Advantages Summarized.

The advantages of fractional boiling may be summarized as follows:

Early removal of the highly colored products of starch and pectose resolutions.

A much cleaner and more easily washed stock.

Greater economy in bleach, a better color and better permanence of color.

Reduction in cost of recovery.

I will not say anything about saving in caustic soda, because the majority of papermakers use more than is necessary under any and every system of boiling. I presume that this would also be the case if they adopted fractional boiling.

Disadvantages: I only know of one, which I will state frankly. The boiler is more difficult to furnish.

While the strong caustic soda employed in the usual process is chemically ineffective in causing resolution of the lignins at a temperature of the liquor during furnishing, it is a physical fact that a degree of loosening is accomplished, or, in the terms of the boilerman—"The bone of the grass is broken," so that it is capable of being stowed away and distributed with greater ease than can be done when a weak or partially exhausted liquor is used. This is the one and only disadvantage which I have experienced, but it is far more than counter-balanced by the advantages.

NEWSPRINT QUOTATIONS.

A newspaper despatch from New York reads as follows: price of $70 a ton recently announced by International Paper Co. for 1922 deliveries has been closely followed by majority of American and Canadian companies.

The following companies are now offering newsprint in rolls carload lots at $70 a ton for firstquarter of 1922: Canadian Export Paper Co., St. Maurice Paper Co., Ltd., subsidiary of Union Bag & Paper Corp.; Finch, Pruyn & Co., E. B. Eddy & Co., Ltd., Pejepscot Paper Co., Hanna Paper Corp., Interstate Pulp & Paper Corp., and F. C. Strype.

At the office of G. H. Mead Co. it was said 1922 prices had not yet been definitely decided upon.

Great Northern Paper Co., second largest producer in the United States, is offering contracts for entire year at $75 a ton.

Prices of spot newsprint have continued steady with paper offered by a New York manufacturer at $70 a ton. German, Finnish and Norwegian paper continues in the market slightly below the domestic price.

MATTAGAMI'S POSITION STATED BY COMMITTEE.

A despatch from New York says that Charles Hayden, chairman of the committee, representing holders of the 6 per cent 21-year first mortgage gold bonds of the Mattagami Pulp & Paper Co., Limited, has issued a notice that the comittee is prepared to advise bondholders not only in regard to their interests as bondholders but also as to the progress of the affairs of the company under its operation by receivers.

The comittee is not at present asking for the bonds, although depositaries have been selected both in New York and Canada. The committee states that the company's business has made progress with substantial reductions in operating costs and improved prices for the company's product under the direction of the receiver and the operating management. Other members of the committee are Sherwood Aldrich, Wilfrid M. Hager and Murray H. Toggeshall.

FACTS ABOUT CANADA.

Few people realize that 26,445 Canadian ex-service men have been established on the land and are nearly all making good; that Canada's water-power development represents an investment of $475,000,000, while the power produced would otherwise require 18,000,000 tons of coal yearly; or that nearly 88 per cent. of the world's supply of asbestos comes from the Province of Quebec. The Natural Resources Intelligence Branch of the Department of the Interior has just issued a revised edition of "Compact Facts," which contains in concise form information regarding Canada, its area, population, trade and industries; their extent, capital invested, wages paid, values of live stock, principal crops, and amounts produced; mineral resources and present production; also forest resources and forest products. Copies of the booklet are available on application to the Superintendent, Natural Resources Intelligence Branch, Department of the Interior, Ottawa.

PULP PRICES MUST INCREASE SAYS HALL CAINE.

In an interview with a representative of the Pulp and Paper Magazine, Mr. G. R. Hall Caine outlined his opinions on the present pulp and pulpwood situation. Mr. Hall Caine, who is the director in charge of the Canadian and American interests of Mr. F. E. R. Becker, of London, England, and also of the subsidiary companies on this side, is on one of his periodical visits to Canada and the United States. He has been here for about four months, the larger part of his time being spent in Montreal.

"I consider that the pulp business is now on a sound footing," said Mr. Hall Caine. "The cost of production is decreasing, and there is a tendency to put the manufacture of wood pulp on an economic basis. Up to now this year we have all been manufacturing and selling pulp at a price which cannot possibly continue, it meant ruination. When the cost of any article gets below the economic line, it must either go up or the article cease to exist. There is no question about the continuation of the pulp industry. After the natural reaction which occurred following the inflated prices in 1920, the pulp market is beginning to reassert itself. In my opinion, it is a good thing that this is taking place, both for consumer and producer. The great essential for the consumer is stability, and the sooner that we who produce and sell pulp—and paper for that matter—can assure the consumer that a stable point has been reached, the sooner will the pulp and paper business in Canada and in the entire world continue to make that natural progress which characterised the industry before the war.

"I predict that we shall see a materially higher price for pulp in 1923, if it does not occur in 1922. There is a logical reason for this. Our principal raw material is pulpwood. Practically every pulp and paper mill in Canada and Scandinavia is overstocked with wood, the result being that the mills are not going into the bush for any material stocks of wood during the winter of 1921-22. They will endeavour to live on their existing stocks, and it looks as if they will get their stocks down to beyond a reasonable point. The outcome will be that the companies will all have to undertake extensive bush operations in 1922-23. Last year we paid men in the woods $100 to $120 per month; now, owing to the limited demand for men, the price is from $25 to $30—which is simply a wage of necessity. This is not a proper level, and I think that in 1922-23 the rate will be $40 or $45 per month, because the demand will be larger, in consequence of heavier mill requirements. You will only find normality in the woods in the winter of 1923-24, when wages will be about $35 per month. In expressing my opinion, I have taken into account the farmer, because most of the companies employ the farmer to get the pulpwood. He will not go into the bush this winter, because there is lack of demand and because prices are low. The lumber position is somewhat similar in the matter of the cut.

"Those of us who have been running our business on sound lines have written down our stocks of wood to the replacement value of to-day. The result is that the wood now stands on our books at $14 and $15 per thousand feet. Therefore, the price of pulp to-day and the costs are based upon the written down value. Ground wood selling at $30 and sulphite at $51 or $52 per ton are based on the written down value of our raw material. The only thing that can happen etween now and the end of 1922 to improve the situation, will be a still further reduction in mill wages. There have been some reductions, but I do not anticipate a much larger cut. If, therefore, you set off possible reduction in mill wages against the increased cost of raw materials in 1923, the inevitable conclusion is that the price of pulp will be higher in 1923 than it is at present.

"The ratio of difference between the price of groundwood, unbleached sulphite and bleached sulphite is, in my opinion, on a wrong basis. The present mill prices are as follows:— Ground wood, $30; unbleached sulphite, $53; and bleached, $100 per ton. It does not cost more than $15 to $20 per ton to bleach sulphite. The result is that we ought to be getting $75 to $80 for unbleached—if the price of bleached is right at $100. The price of unbleached must come up. It is usually reckoned that, taken over a series of years, the proper price for unbleached is the price of newsprint, which is now from $70 to $75.

"Taking all these facts into consideration, I look forward with great confidence that from now on we may expect not only better and sounder prices for pulp, but a distinct revival in the pulp and paper industry both in the United States and Europe."

MAKE BARE ACRES WORK, SAYS BAKER.

Yonkers, N.Y., Dec. 9.—"It is my belief that New York should, as a state, purchase no more forest lands until we have put those which we now own to work in a satisfactory way," declared Dr. Hugh P. Baker, Vice-Chairman of the Forestry Committee of the Chamber of Commerce of the United States, and Secretary of the American Paper and Pulp Association, when he discussed the housing problem and the forests before the Yonkers Real Estate Board.

"We are all proud," he said, "of the barge canal, though it will not produce a revenue commensurate with the investment for many years to come, but if New York would spend half as much in replacing the forests on her idle forest lands as she has spent upon the canal we would in the course of a few years again have a forest that would help us to solve in a large way some of the serious problems now confronting us in the way of material for the building of homes and other buildings.

"We have as a state just completed the use of a bond issue of $10,000,000 for the purchase of forest lands, and another bond issue has been suggested for the purchase of additional land. The time has come when the state should first spend from twenty to thirty millions of dollars to reforest not only the land which it owns, but to assist the private owner in reforestation and protection of existing forests.

"We are spending over $30,000,000 a year to import the lumber from the South and the Pacific coast, 1,500 and 3,000 miles away, which could be produced in our own state.

"If the Chambers of Commerce throughout New York State could put themselves solidly back of a program of reforesting New York's forest wealth, they would bring a tremendous return not only to the state as a state, but to their own communities in the way of upbuilding industries, conserving water, and making the state a great playground for the people of our cities."

AN AUSTRALIAN VIEW OF PAPER TARIFF.

Canadian manufacturers of newsprint have expressed in no uncertain manner their dissatisfaction—to use a mild term—with the treatment received at the hands of the Australian Government in the matter of the tariff on newsprint. They assume discrimination against this country in favor of Britsh papermakers, and an attempt by the latter to secure exclusive control of the Australian paper market. Canada bore a not inconsiderable share in the world war, and if any preference is to be given by Australia our manufacturers claim an equal share with the Mother Country. They see no reason why one part of the Empire—even if it be the Mother Land—should be favored at the expense of another, and if a preference is to be granted on patriotic grounds then Canada is equally entitled to that preference.

Mr. James Holland, the representative of British makers who took a very prominent part in securing the preference for Great Britain, was last week in Montreal, on his way to Australasia, China and Japan. A representative of the Pulp and Paper Magazine interviewed Mr. Holland in order to obtain information as to the reasons why Great Britain secured the preference, to the exclusion of Canada. Mr. Holland explained the attitude taken by him on behalf of the British paper makers, and strongly denied any unfair descrimination against Canadian producers.

"By pure accident I was in Australia when the tariff was under discussion," said Mr. Holland. "As the representative of British manufacturers, I was naturally interested in the question. Our industry suffered tremendously during the war—as a nation we bore the heat and burden of the day—and I represented to members of the House of Representatives and the Senate that Great Britain was entitled, on these grounds, to some consideration. The Government proposal was to allow British newsprint free entry, and to impose an intermediate tariff of £2 per ton and a foreign tariff of £2 per ton. When the Bill was presented to the House of Representatives, the vote was in favor of British free, intermediate tariff £3 and foreign £3. The Senate however took another view, and recommended British free, intermediate £2 and foreign £2. The House of Representatives stuck to their proposals and on the matter being jointly considered by the two chambers, the Senate accepted the House of Representatives' proposal of British free, intermediate £3 and foreign £3.

"My original proposal to the Minister of Trade and Customs was British free, intermediate £4 and foreign £5. Canadian newsprint would have come in under the intermediate tariff. My proposal was aimed at Japan and at those foreign countries which were antagonistic to the Empire during the war. I had not the slightest idea of any discrimination against Canada. British manufacturers are satisfied to secure the share of trade which was held by foreigners, and to leave Canada undisturbed in the business she obtained. What the British makers expect to get is that trade which was in the hands of foreigners in pre-war days.

"I found in Australia a certain amount of soreness with what is termed here the American-Canadian combine, which it was alleged held up Australian consumers of newsprint during the war; and in my opinion, this feeling had something to do with the refusal to grant the alleged combine any preference. This is what I found.

"Even under the existing preference British manufacturers do not expect to get the whole of the business. The imports of newsprint into Australia total 50,000 long tons per annum, and if Great Britain secures 20,000 tons she will be more than satisfied. Furthermore, I claim that I was only asking for the Mother Country such terms as would allow her to recover from the effects imposed upon the paper trade by the war.

"I want to emphasise the point that I was fighting for the British manufacturer. I had no feeling against Canada, and in no way expressed views hostile to her manufacturers or her interests I was the representative of British interests—that was the only point from which I fought. I left other interests to put their own case before the Government."

SENATOR EDWARDS' ESTATE.

Ottawa, Dec. 9.—The estate of the date Senator W. C. Edwards, pioneer Ottawa lumberman, millowner and parliamentarian, is valued at $1,992,948.46, according to a statement issued yesterday by his solicitor. Application for probate will be made today. The entire estate is divided among members of his family and that of his widow. Mrs. Edwards is given a substantial life annuity.

More than half the entire estate consists of Dominion of Canada Victory bonds. The Senator died possessed of $1,020,93.83 worth. Hhis next greatest interest was in the Bathurst Company, Limited, Bathurst, N.B. He was the owner of 8,928 shares in this company, valued at $446.400

The statement values 1.000 shares of Riordon Company stock at $2,750.

The principal assets of the estate are: Dominion of Canada Victory loan, $1,020,093.83; 100 shares Bank of Commerce, $18,500; 1,537 shares Ottawa and Hull Power Company, $153,700; 8,928 shares Bathurst Company, Limited, Bathurst, N.B., $446,400; 2.700 shares Canada Cement Company, $152.550; 1,250 shares Woods Manufacturing Company, $87,500; 666 shares Babcock Carrier Florida Company, Punta Gorda, Florida, $33,330, and real estate at Mousseau Lake, Quebec, 12,203.

The Senator explained in his will that, owing to the large amount of succession duties which would be levied against his estate, and which he understood were utilized by the Government largely for the benefit of various charitable and benevolent institutions, he made no bequest to any charities, "such as I otherwise would have done," as his statement concludes. It is estimated that the province of Ontario will obtain about 20 per cent of the estate, or nearly $400,000.

BECKERS OPEN MONTREAL OFFICE.

The Becker Company of America, Limited, have opened offices at 164 St. James Street, Montreal, where they occupy an entire floor. This office will also take care of the various English and Canadian interests associated with the Becker Company. Mr. A. M. Irvine is a director of the Becker Company of America and the permanent representative in Montreal. It is not intended to make any change in the head office in Halifax, which is in charge of Mr. Harry I. Mathers, whose principal work is to look after the two pulp mills in Nova Scotia. It is probable that the Chicoutimi Pulp Company will open an office in the same building.

British Trade News

(From Our London Correspondent)

London, Dec. 2nd, 1921.

Trade with continental and other countries is so bad that in order to promote an export trade the British Government is urged by the Federation of British Industries, amongst other bodies, to consider the question of German reparations and the burdens imposed on former enemies. There are some people to-day who favor cutting them down by one-half, that Germany should pay to the extent of her capacity and that the Allies should even be prepared to lighten the evidence of the burden imposed upon Germany. It is really most remarkable the views held by a certain class of people on this reparations question. Some people soon forget that over 3 years ago we were in a war fighting for our existence. According to all accounts Germany is going on nicely and the French Premier's speech at Washington shows there is still some uneasiness about the "goings-on" in the "Fatherland."

"The Germans Don't Get Away With It."

In the "Pulp and Paper Magazine" for November 10th last it will be recollected that Mr. T. Lindsey Crossley, under the above headline, wrote a letter to the Editor giving some information about the smallest papermaking machine in the world, which was exhibited at the King Edward Hotel, in Toronto. The statements were made: (1) That Lord Northcliffe offered $25,000 for the machine; (2) That the machine was smuggled out of Germany into England; (3) That the machine was made in Germany. Mr. T. Lindsey Crossley contradicted these 3 points and he is correct. But let me tell the history of the little machine. After the papermaking machine had been made by Messrs. T. J. Marshall & Co., Ltd., of Campbell Works, London N., who are the well-known papermakers, engineers and specialists on dandyrolls and watermarking, previous to the war it was some time about 1911 I am sure—sent to Germany for exhibition at the Leipzig exhibition. War broke out in August, 1914, and many people will remember the anxiety there was over exhibits at Leipzig at least in London there was. The papermaking machine, however, was stored in a museum and after the war was over Marshalls got it back through the British Clearing House. On its arrival in London an English firm purchased it and it was shipped to America, but to what place or firm in the U. S. A. I do not know. The next thing heard of the machine is its appearance at the Convention of the U. T. A. in Toronto. Lord Northcliffe never offered $25,000 for the machine, because he knew the value of it and he could get one very much cheaper from Marshall's. But it is very doubtful if a machine like the one seen at Toronto could be bought to-day for £300. Sometime ago Marshall's refused £540 for one—but another £10 added would have purchased it. That is their price to-day, according to what millmen tell me, and £550 is a long way short of $25,000 and considerably in advance of £300, which is a pre-war quotation. It would now be interesting to know who got the machine in America after the war ended. There is a good one here now in Marshall's and I am just as curious about its destination and buyer as I was about the 1914 machine.

Postage on Paper.

The Postmaster-General is again in "hot water" this week with the papermakers. Last week I mentioned that he refused to pass at a cheap rate samples of paper. Spicer Bros., Ltd., the papermakers of New Bridge St., London, have now received a letter from the Postal Authorities saying that "samples if enclosd with orders" should not be allowed to pass at the printed paper rate. Messrs. Spicers have already received 300 letters on the subject, so important is it to clients and others. They have now sent the following letter to the Postmaster-General: "As to the excuse that the printed paper rate is unremunerative, which is fallen back upon, after the previous excuse or reason that to alter the regulations would give dealers in papers an advantage over other traders had been proved to be fallacious, has the Postmaster-General data to prove the assertion to the satisfaction of any competent accountant outside a Government department? Even if he had there is surely sound business sense, particularly from the national point of view, to treat the carrying side of the Post Office business as a whole, and if the results as a whole are satisfactory, to reduce the charges in connection with matters that make for trade. If you judge weight by weight, the newspaper rate cannot be a paying proposition, but it would be folly from a national point of view not to throw in the swings with the roundabouts." The reply of the head of the P. O. will be interesting to this commonsense letter. From what one can gather the idea of the post office in order to make the department "pay" is to kill the system of sending out samples, failing this to make the unfortunate papermakers—with government interference hanging like a mill stone round their necks—pay full price rates, while the newspaper creeps through at the reduced rate. One is a sample of paper; the other is a sample of newspaper on its way to a subscriber.

Wall Paper Coy's Loss.

As I write the Wall Paper Manufacturers' deferred shares have fallen to 45d.-48d. 90 cents to 96 cents on the deplorable results shown in the preliminary statement for the year ended August 31st last. There is a net loss of £919,246 against a net profit of £652,977 for 1919-20. When all adjustments are made (£181,054 brought in, £100,000 from the contingencies fund and £109,846 from income-tax reserve fund no longer required) and after deducting the £28,659 paid as interim dividend on the preference shares, there is still a debit balance of £557,203. Last year the directors distributed the reserve fund of about £500,000 among the deferred shareholders in the form of a bonus. No doubt the company has suffered from the curtailment of building schemes in the country and from German competition on the continent where owing to the vagaries of the mark exchange, Germany has practically a monopoly of the wall-paper industry.

Finland Again.

I had some strong remarks to make last week concerning Finnish imports of paper into the British market and I notice that Mr. E. Percy Reed, of Albert E. Reed & Co., Ltd., and Mr. Joe. Dixon, of Peter Dixon & Son, Ltd., have contributed letters to the "World's Paper Trade Review" on the subject. These imports are undercutting the prices of the British output of paper owing to the depreciated exchange, and Mr. Reed mentions that his firm has had to cut prices in order to hold orders against Finland's competition. This is more evidence, I must point out, in favor of the Safeguarding of Industries Act and Mr. Joe Dixon admits it. What I cannot understand is: Why do papermakers complain about unfair competition when they have an Act to enable them to slap a 33 1-3 p.c. duty on Finnish paper. The dumped price of Finnish newsprint is about £20 a ton and the British is up to £22 and £23. And we have it from Mr. Reed that he is compelled to reduce his price to meet the Finnish price. The whole question is a most serious one and should not have been allowed to "hang fire" so long. The delay has meant that Finnish mills are running full time while the British machinery can hardly be fed on half-time. That is the position to-day. What was it in April last? Stanley Cousins, in his famous letter to the "Times" written at the end of May last, said: "British millowners, who realize the serious position of the industry, have reduced their contract prices to British consumers well below cost in an endeavor to keep our work people employed. . . ." If that was the position in April last before the Safe-Guarding Industries Act was introduced—and in which Mr. Stanley Cousins wanted all the paper trade included—what must the position be like to-day with Finnish newsprint coming into the market £3 a ton cheaper than the British product! Up to the present no announcement has been made that a case has been made out under the Act. Should there be one made out, the sooner the Board of Trade Committee get at it the better for the British mill men and his workpeople. There is no hiding the fact that mill men are fighting with their backs against the wall and they are entitled to expect that unfair competition be balanced by a temporary import duty and corrective exchange regulations. Indeed, there is no country in the world would stand what the British paper trade is enduring at present and the strange thing about the whole policy is that, in the interest of workers alone not to mention manufacturers—no one will give a lead to put a "screw" on the cheap imports. It is well-known that where there is no profit coming in, there is no work, and, incidentally, I may mention, that some of the balance sheets of the mills here will be doubly interesting when they are issued. They will tell the story—the story of full running machinery on one side and half starved machinery on the other. Indeed, the story of failures already amongst the dealers is a lamentable one and the papermaker again comes in for his share of the losses.

Codified Customs.

Codified Paper Trade Customs have been raised and adopted by the British Papermakers Association, the wholesalers, merchants and other users. Here are a few samples:

(1) A machine-made printing paper ream is 500 sheets.

(2) A wrapping paper ream contains 480 sheets.

(3) A "mill" ream "Good" or "Retree" has 472 sheets.

(4) Complaints must be made in writing within 14 days.

(5) All disputes will be submitted to arbitration in the United Kingdom when they arise under a contract.

They are carefully drawn up under specific headlines in sections and these new codified customs should help to alleviate the many differences that often arise. I notice under the headline "Materials" the following: Unless it is otherwise expressly stipulated in the order, the papermaker shall be free to use his discretion in the selection of materials.

Preference for British Newsprint.

News has reached London that the tariff on newsprint admitted to Australia has been reduced. Of late things have been very erratic with papermakers here in regard to the Australian market and it is now felt that the preference given to newsprint will stimulate more trade. An interesting point now arises: Does the word British include Canadian newsprint? The policy after the war was trade within the Empire. (See page 1264).

Technical.

The Scotchmen have just opened their session, in connection with the Technical Section, at Aberdeen. Amongst the papers for the winter will be: Modern Methods of Evaporation for the Concentration and Recovery of Liquors"; the "Measurement of Temperature"; "Beating Problems"; "Transmission of Power in the Paper Mill"; "The Estimation of Starch in Paper"; "Timbers and Their Uses in the Paper Mill." These subjects will be dealt with by engineers, chemists, directors and others. Col. T. Davidson is chairman of the session.

Another Tariff.

The Belgians have increased their tariff on wallpapers, cardboard and other kinds of paper, particularly German paper, which, it is pointed out, is produced cheaper than what the Belgians could produce it. For some time past the paper and board industry of Belgium has been in a bad way and an attempt is now being made to get the mills going again. Consequently foreign imports are being singled out and the lesson is one that should interest the British mill men who are in the same plight as their confreres across the North Sea.

Forestry.

Forestry is an acute subject here at present. At the inaugural meeting in London of the Empire Forestry Association, which comes as an offspring of the Imperial Forestry Conference held in 1920, a resolution was moved by Lord Lovat urging the need for an extension of a constructive Empire forest policy and promising support to the Empire Forestry Association in its endeavors to stimulate the wider utilization of the many valuable commercial timbers of the Dominions, Colonies and Protectorates. The High Commissioner for Canada (Sir George Perley) in a neat little speech seconded the resolution and spoke of the desirability of an educational campaign which would teach people a proper system of forestry organization and development, and so enable the different parts of the Empire to grow valuable timber, especially on waste lands. The resolution was adopted.

The Pulp Market.

For the chemical pulps the demand is not brisk. There is, however, a slight improvement when compared with a month ago. For ground wood business is brighter and some good shipments have lately arrived from Canada. The dullness of the paper industry unfortunately is reflected in the pulp trade: but what is moving to-day keeps pulp sellers from becoming downhearted.

Prices are about as follows:—Sulphite £20; Easy Bleaching (No. 1) £14½; Sulphite Newsprint Quality (No. 1) £12; Unbleached Soda (No. 1) £11; Soda Kraft £11; Groundwood (wet) £4. 15s.; Groundwood (dry) £9.

The Australian new tariff may brighten up the paper trade. If it does pulp men may anticipate some business.

PULP AND PAPER NEWS

As these lines are being written, the case of the Ontario Government against the Shevlin Clarke Company has been opened at Osgoode Hall, Toronto, before Mr. Justice Logie. The Crown is suing for the return of dues upon timbers alleged to have been illegally cut, or cut and not paid for, and for the cancellation of certain grants of timber areas. The timber in question grew on Berths 45 and 49 in Quetico Park, Ont. The Crown contends that 110,000,000 feet of pine timber was granted to the Shevlin-Clarke Company by the Hon. Howard Ferguson, then Minister of Lands and Forests, in 1919, and that the right to cut this timber was given without advertisement or tenders being called for, which is contrary to the rules and regulations of the department. The timber was sold to the defendant Company for $9 per 1,000 feet but, on behalf of the Government, evidence has been put in to show sales in Timagami running as high as $20 and $22 per 1,000 feet in the same year. An expert witness for the Crown describes the timber thus sold to the Shevlin-Clarke Company, which is the cause of dispute in the present action, as "the finest virgin pine I have ever seen." The case has been adjourned to the 27th of this month, and the judge, has intimated that it must be concluded within two weeks from that date. A great deal of interest is being taken in this case in pulp and paper circles in Ontario.

It is reported from Iroquois Falls that paper can now be shipped from the Abitibi Power & Paper Company's plant and be delivered in New York or Chicago in forty-eight hours. This is said to be the result of a system of car stations and efficient organization that keeps the Company in much better touch than formerly with its customers. It is also reported that the system of production has been considerably improved owing to keener work by the grinder men, and that a great saving has resulted from this, and a consequent reduction in the cost per ton of output.

There are no signs of any change in the situation with regard to the printers' strike in Toronto. Last week, the secretary of Local 91, International Typographical Union, received a message from the Indianapolis headquarters of the Union that the strike assessment upon printers at work would be reduced from ten to seven per cent. The reason for this reduction is stated to be that the revenue received from a ten per cent assessment amounted to $1,000,000 a month, which was $200,000 more than requisite to meet the strike pay of the printers on strike in various cities on the continent.

Mr. J. A. Bothwell, of the Brompton Pulp and Paper Company is, we regret to state, seriously ill. He has undergone an operation for appendicitis in the Sherbrooke Hospital.

Mr. Norman E. Wainwright has just returned from a trip to Australasia, which he visited in the interests of the Howard Smith Paper Mills, Limited, and the Provincial Paper Mills, Limited.

Next year the Dominion Forestry branch will resume the survey undertaken, two years ago, by the Commission of Conservation, of the forest and pulpwood resources of Ontario. This work, which was temporarily stopped by the abolition of the Commission in question, is greatly necessary on more grounds than one, and it is satisfactory to learn that it will not be allowed to drop.

One of the striking printers of Toronto, by name George Dawson, is seriously ill in St. Michael's Hospital, Toronto. Two other striking printers, out of twelve volunteers among them, were selected for an operation of transfusion of blood, which it was thought might save his life.

The Deseronto plant of the Dominion Match Factory was last year, purchased by the E. B. Eddy Company, of Hull, which concern has now assumed the management.

The reduction of ten per cent which, with the beginning of this month became effective in the freight rates of all railroads in Canada, will be greatly appreciated by pulp and paper concerns. Not only will paper and pulp be carried cheaper, but the benefit will also be felt as regards lumber, pulpwood, coal and other raw materials.

The extended groundwood plant of the Belgian Industrial Co. has reached a production of 246 tons per day. The aim of the staff is 275 tons.

Mr. Delraulx has bid "Adieu" to friends at Shawinigan Falls. Here's hoping he will have frequent occasion to return to Canada.

Mr. G. Meerbergen, who is well known as a keen advocate of, and untiring worker in the cause of Safety First has resigned from the Belgian Industrial Co. and will go into business in Belgium. He will be greatly missed by the Technical Section, of which he was truly an "active" member—Good luck, Gab!

Mr. H. Biermans, general manager of the Belgian Industrial Co. has returned from a business trip to Europe.

Mr. James Holland, representative of the paper mills controlled by Mr. F. E. R. Becker, of London, England, and whose work consists of travelling round the world arranging and visiting the various agencies, is now on a visit to Montreal. Mr. Holland has travelled nine times round the world.

The steamer "Drottningholm" sailing last week from New York for Sweden had on its passenger list a number of prominent paper men, among them I. W. Bowmall, vice president of the American Wood Pulp Corporation, accompanied by Mrs. Bowmall; Consul T. Lundgren, secretary of the Swedish Wood Pulp Association; G. Thunberg, of the firm of Olaf Wijk & Co.; N. Johanneson, of the Scandinavian American Trading Company; Ovar Hylin, of Lagerlof Trading Company, and E. Khilstedt of A. J. Pagel Company.

A postage stamp can be licked once; but after that it delivers the goods.

UNITED STATES NOTES

The MacSim Bar Paper Company, Otsego, Mich., will soon call for bids for construction of its proposed electric power plant for general paper mill service, to be 1-story, and estimated to cost $300,000. Billingham and Cobb are the architects.

With the passing of the Maine lumber trade in recent years before the steady encroachments of the pulp mills, the port of Bangor has declined so that it is now frequented only by steamboats and coal barges, where formerly the harbor was crowded by sailing vessels from all parts of the world, attracted there by one of the foremost lumber markets. While logs were sawed into lumber along the Penobscot River, Bangor's port prospered and the river hummed with the activities of numerous saw-mills. Then came the pulp mills and since their advent the log crop has been steadily diverted from the saws to the digesters and grinders, until to-day the pulp manufacturers not only use most of the log crop but also own most of the desirable timberlands, and save for those far up the State, along the lines of the railroads, sawmills are few and far between, and presently one will be a curiosity on this great river where once they stood in dozens.

Following a decision to re-open the general wage settlement determined upon last summer by the paper mill strike arbitration coommittee, hearings were begun last week before members of that body in New York City. The settlement last summer included an agreement that either side might reopen the case when the arbitration board was convinced that there was sufficient cause. The board has consented to reopen the case, and proof is being submitted at the hearings. Whatever the outcome may be, the changes will apply to all the companies bound by the arbitration decision.

Contending that the ship and paper machine building concern—the Pusey & Jones Company of Wilmington, Del.—is able to meet its current obligations, counsel for the corporation have asked the United Circuit Court of Appeals to revoke the appointment of receivers in equity. The case is being appealed from the order of District Judge Morris, of Delaware, appointing the receivers on a bill filed by Hans Karluf Hanssen, a representative of several Norwegian concerns, who had been sent to the United States to collect indebtness from Christoffer Hannevig, president of the Pusey & Jones Company. In part liquidation of the indebtedness, Mr. Hannevig gave Mr. Hanssen 7,200 shares of the company's stock, but when he failed to meet the remainder of the indebtedness, Mr. Hanssen filed the bill of equity averring the shipbuilding company was insolvent.

Manufacturing some ten thousand separate items, the Dennison Manufacturing Company of Framingham, Mass., has been able to keep running full time during the recent depression by producing large advance stocks of certain articles. At the present time part of the plant is being kept going turning out the 1923 stock of holiday cards, and other stock products are being made in other units of the plant that might otherwise be idle. Long time planning and storage compose one of the methods used to regulate the business of this company. The cost of storage and of capital tied up in products seems at first sight to be a heavy toll, but economically it is sound. The explanation is simple. If the company did not plan ahead and make investments in merchandise and in storage room it would have to make investments in machinery and buildings to handle the peak load of production. This would amount to more than the investment in goods and it would have the disadvantage of being a fixed investment rather than a quick asset. Instead of having its capital "frozen" in fixed investments it is expended in goods which are liquid. The factory which shuts down must lose both the overhead during the time of idleness and the profits which would have come had there been orders. Also it losses because of unused machinery. Many establishments are built to carry a peak load. During most of the year much of the machinery and space are not used. That is a heavy loss, a waste, which must be charged against the productive season.

The Federal Board for Vocational Education has begun its work of foreman training in the paper industry, starting with a course of instruction for employes at the plant of the Champion Fibre Company, Canton, N. C. Twenty sessions were held from November 7 to 19 under Frank Cushman, agent for the Federal Board. In the opinion of several of the Champion Company's executives, the course, while having shown no tangible results as yet, was well worth the time given up to it. The Vocational Board is planning to start similar classes in the paper making regions of New York and New England, extending them later to other sections of the country.

A new envelope contract whereby the public will be saved approximately $6,276,194, was announced by Post Master General W. H. Hays in his first annual report. This contract, made with the furnishers of stamped envelopes and newspaper wrappers was the result of a direct appeal of the postmaster general to the contractors for a re-adjustment of the prices. The contractor concurred in the opinion that there had been a substantial reduction in cost and that a cancellation was warranted, and entered into supplemental contract with the consequent saving mentioned.

Two billion feet of Alaskan pulpwood, the largest amount of National Forest timber ever offered for sale, is described in a prospectus recently issued by the United States Forest Service. The timber is within the Tongass National Forest, and covers about 90,000 acres with a frontage of 48 miles on navigable water, and 24 miles by boat from Juneau. Four-fifths of the timber is western hemlock and one-fifth Sitka spruce, both of which make excellent grades of paper, as has been demonstrated by the mills of Oregon and British Columbia. The sale period will be thirty years, and a large plant will be required to utilize all the timber within that time. The sales contract requires that a pulp manufacturing plant of not less than 100 tons daily capacity shall be established in Alaska by the purchaser within three years.

Photographic plates of paper are superior in many respects to those of glass.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 10th Dec.—The fact that, at last, the Dominion election campaign is over is regarded in pulp and paper circles as, in itself, a good thing. Despite the stimulus that so prolonged a campaign undoubtedly directly afforded to certain lines of the industry, on the whole it conduced to doubt and uncertainty, and hence to a certain measure of unsettlement, at a time when, in this industry as in others, any element of this nature is more than ordinarily undesirable. So far as the result of the election is concerned, one finds that the victory of the Liberals is received by paper men in this locality, if not exactly with enthusiasm, at any rate with an appreciable measure of equanimity. The general tenor of the comments to which the writer has listened from men prominent in the industry is to the effect that the Liberal majority, constituted as it is, will not be likely to take any steps, so far as tariff revision is concerned, which will be detrimental to Canadian pulp and paper interests. These interests, in the present stage of the industry's development in this country, have special difficulties of their own to which any revision of the tariff along well-considered and sagacious lines, is bound to pay adequate heed. The industry, in the space of a very few years, has become an important unit of Canada's industrial fabric. But it has not yet attained its full development. It has recently passed through a period of acute depression in a manner which has reflected great credit on itself and its leaders. In such circumstances, the time is not opportune to deprive it of the protection which is necessary if it is to continue its development unimpeded. And, on the whole, opinion in the industry distinctly inclines to the view that, in the revision of the tariff which doubtless will be, ere long, undertaken by the new Government which will be formed, steps such as to effect adversely the interests of an industry in such a special position are unlikely to be taken. This opinion is held with the more confidence inasmuch as the Liberals have a majority independent of the Progressives.

Pulp and paper men, in common with those engaged in most other manufacturing industries, did not, at any time, fear the handling of the tariff by the Liberals so much as by the Progressives. The really low tariff element of the new House of Commons will be confined, almost solely, to the ranks of the last-named party. And, as things are at present, while that party will, no dout, be able to make its influence felt, in various directions, on legislation, there is little reason to apprehend that it can force extremist fiscal courses on Parliament. In this connection, it is interesting to hear the satisfaction that is expressed that Quebec represents so large a proportion of the Liberal majority. Ontario manufacturers have not much in common with the French Canadian politicians in more than one direction, but, at least, they think that, on the whole, they are likely to show themselves a steadying influence in fiscal matters.

At any rate, so far as the pulp and paper industry is concerned, the result of the Dominion election has been received with a considerable measure of equanimity. It is felt that the industry, in the main, is well on the road to substantial general recovery and that nothing untoward, in the way of adverse tariff action on the part of the new Government, need be anticipated to retard that recovery.

PULP.—The market for pulp is not yet firmly established on a profitable basis for operators. The demand for bleached sulphite is pretty good, at prices around $90 a ton. News grade sulphite is also finding purchasers at about $60 a ton. But easy bleaching sulphite is not in very good demand. Groundwood pulp, for which between $26 and $28 a ton is being paid, is far from being in strong demand. The prices quoted above are at the mill.

NEWSPRINT.—Publishers are pleased at the reduction in the price of newsprint to $75 a ton and at the prospect that, in order to meet the pace which the International Paper Company is expected to set of 3½ cents a lb., it will have to come down yet $5 lower per ton. But the newsprint mills can hardly be expected to share in any jubilation at this. Indeed, the representative of one of such mills pointed out to the writer with emphasis that, as many mills hold heavy stocks of pulpwood bought at prices very different from those which pulpwood can command today, mills would be losing money by selling newsprint at $70 a ton. However, "needs must" when a certain personage drives and it looks very much as though it will be a case of "Hobson's choice." But it is rather a remarkable circumstance that some publishers seem to expect the price of newsprint to fall below the $70 figure before long. They point out that the ten per cent cut in freight rates should help to bring down the price, and in other lines of paper as well as in newsprint.

BOOK AND WRITING PAPERS.—The demand for most kinds of book and writing papers has been good, with orders coming in satisfactorily. It is possible that, with the Dominion election over, there may now be some slight falling-off in briskness, as the campaign made a heavy demand on certain lines. But it is expected that, with the New Year, a drive for more advertising is likely to occur and that this will result in an enhanced demand.

BOARD.—After recently giving so good an account of itself, the board market is not so active as it was. But jobbers seem hopeful of more activity in the early part of the New Year.

WRAPPING PAPERS.—The demand for wrapping papers continues good, but one hears, in connection with kraft, a recrudescence of the complaint against price-cutting, as to which a good deal has been said, from time to time, in this place.

TOILETS AND TISSUES.—Prices are firm in toilets and tissues and sales are fairly satisfactory, but not quite the same amount of briskness is in evidence in some lines.

As Montreal Sees It.

Montreal, December 12.—On the whole business in pulp and paper is satisfactory. Here and there reports are to be heard of a slackening in demand, but it is not of a serious nature. It is perhaps only natural that after the recovery in trade there should be a slight setback in the paper industry at this period. If expressions of opinion are of any value, there is no danger of such a falling off in the volume of business and in prices as to cause alarm. The general opinion is that business will improve particularly as we now know the result of the elections. Parliamentary contests have generally speaking, an unsettling effect on commerce, and when the public is assured of a decision that fear is allayed.

The pulp market does not show any great activity, but is by no means dead. In another column will be found an interview with Mr. G. R. Hall Caine, who argues in favor of a stronger market in the future. He holds that the natural growth of pulp can only be assigned by higher prices, and that the conditions warrant an advance in values.

NEWSPRINT. The International Paper Company has now made a definite announcement of its intention to charge $70 per ton for the first quarter of 1922. There was of course only one thing for Canadian mills to do if they wished to secure a large amount of business, and that was to meet the competition. This is being done. The I.P. Company has gone one better than the Canadian companies, and has forced prices lower than was looked for just now.

PULP.—There is a fair demand for all grades. This would be larger but for the fact that American buyers are making up their inventories, and as there is a tax on the stocks in hand, the inclination is to restrict purchasing for the time being. The Hawkesbury mill of the Riordon Company is again in operation. According to one company which deals largely in both groundwood and sulphite the tendency is firmer, and a still stronger demand may be looked for. Many Scandinavian mills are closed down owing to scarcity of water.

BOOK PAPERS.—Business is fairly good, with a favorable outlook for the future.

FINE PAPERS.—In this department there is not much inclination to buy pending the annual stocktaking.

WRAPPING PAPERS.—No complaint can be made on the score of orders, which are coming in at a satisfactory rate.

ROOFING PAPERS.—No. 1 saturating felt for patent roofing is quoted at $75 f.o.b. mill. There is a possibility of a slight reduction but this is not expected to stand for long; in fact the price may go up if the supply of raw materials does not improve.

RAGS and WASTE PAPER.—There is not a large reserve of rags for paper making, but prices are unchanged. The supply of waste paper is not sufficient to meet the requirements of mills in the vicinity of Montreal ,and some material has been imported from the States, making the price equivalent to the American price, plus freight.

NEW YORK MARKETS.

New York, December 10.—(Special Correspondence) —The International Paper Company has officially announced a reduction of $10 a ton in the price of newsprint paper for deliveries commencing January 1, making a new contract price of $70 per ton f.o.b. mills for paper in standard rolls in carload lots. The price fixed for the coming year represents a drop of $60 a ton from the peak price prevailing in the last quarter of 1920 and the first quarter of the current year. Contracts will be made by the International on a price of 3.50 cents a pound for the full year 1922, or customers may elect to contract for six months' requirements at this price, with tonnage for the latter half of the year to be adjusted by agreement. In such an event the International guarantees that the price for the latter half of next year will not be in excess of 3.75c. or $75 a ton.

This cut in the price of newsprint by the leading domestic factor followed a reduction of $5 a ton announced by Canadian manufacturers, and was, as noted in this report last week, not unexpected in the trade. The fact that the I.P. states that this price will apply throughout 1922, however, leads the trade to believe that newsprint prices are finally readjusted, and opinion in paper circles is that there is not likely to be any further reduction in print paper prices. Since the I.P. announcement of a cut to $70, reports from Canada say that leading newsprint producers there have made a reduction to the same basis. The second largest producer in the United States is reported offering contracts for the entire year of 1922 at $75 per ton.

One of New York's daily afternoon newspapers yesterday printed an issue of 58 pages, carrying 343 columns of advertising printed. It is significant that this same newspaper boasts that since its last Government circulation report was printed, its circulation has increased more than 40,000 copies a day. If anyone doubts that consumption of newsprint is heavy at present, this single illustration should serve to convince him that at least as much, if not more, print paper is being used up day after day at present by United States' publishers than ever before. Pre-holiday advertising this year is exceptionally heavy, and newspaper publishers in New York and throughout the country are consuming record tonnages of paper.

Influenced by the cut in the contract basis, spot prices on newsprint have eased off slightly. Most domestic manufacturers continue to quote 4 cents, or $80 per ton, for spot deliveries, but many of them are taking orders at 3.50 to 3.75 cents, and this latter is about the prevailing market range at the moment. Imported newsprint continues to be offered at slightly under the domestic price, or in the vicinity of 3.25 cents per pound ex the dock.

Generally speaking, the paper market is quiet. Print paper is the exception, most other grades are in considerably less demand than a short time ago, and quotations in a good many instances evince a downward trend. Important buyers are operating cautiously; most of them are placing orders only when in direct need of paper, and it is plainly apparent on all sides that mills are in want of business. Book papers are gradually receding in price. Manufacturers are competing against each other to obtain orders and are repeatedly cutting prices to secure business. Machine finished book of good quality is available at 6 cents per pound f.o.b. New York and less, and some qualities of coated book are bringing no more than 8 cents f.o.b. this and other consuming centres.

Tissues and wrappings are, comparatively speaking, in fair demand. Consumers, however, are absorbing these grades of paper in limited amounts, and mill orders have fallen off in volume and number. Prices hold steady, with No. 1 domestic kraft wrapping quoted by mills at 6.75 to 7 cents a pound f.o.b. New York and No. 1 white tissue, basis 20 x 30, at around 90 cents a ream.

Fine papers are moving in moderate amounts and prices are about at unchanged levels. A reduction

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averaging between 10 and 12 per cent in prices on prepared roofing and asbestos shingles has been announced this week by leading manufacturers. Box boards continue easy and in slow demand. Most paper box manufacturers have about completed their Christmas orders and are holding back in purchasing board, as is usually the case toward the close of the year, and some mills are said to be so badly in need of business that they are closing down temporarily. Plain chip and filled news board are available at the same price, namely, $30 per ton for sidewalk delivery in New York, which means that most mills in New Jersey are obtaining no better than $25 a ton f.o.b their plants for board.

GROUND WOOD. The wood pulp market at the moment lacks feature, and mechanical pulp is no exception from this condition. At the same time, ground wood is in fairly good demand. Newsprint mills are buying quite freely, and there is a large enough movement in other directions to give the market a moderately lively complexion. Prices are steady to firm and incline upwards, this being due presumably to the rather light stocks of ground wood at producing mills. Domestic grinders are quoting an average of $32 a ton f.o.b. pulp mill for prime spruce ground wood for prompt shipment, with prices ranging a couple of dollars per ton on either side of this point. Some foreign ground wood is offered on the spot in this country at approximately the same price domestic producers ask or a trifle higher.

CHEMICAL PULP.—A strictly seasonal condition exists in the chemical pulp market. With paper manufacturers preparing to take inventories and therefore endeavoring to reduce stocks of raw material, buying is almost solely against immediate requirements, with the result business is principally of retail character. Nevertheless quotations are well maintained. Bleached sulphite is firmly held by domestic producers at from 5 cents upward for No. 1 quality bleached, and importers are asking 4.50 cents and higher for foreign bleached No. 1 grade. Easy bleaching sulphite is firm at between 3.50 and 3.75 cents a pound, and news grade sulphite is selling at around 2.75 cents a pound at pulp mills. Kraft pulp is in comparatively steady demand and prices are holding. Domestic No 1 kraft is bringing 3 cents at producing mills for strong pulp, and around 2.75 cents for secondary grades. Scandinavian kraft is quoted at around 2.75 cents on the dock. Advancing rates of exchange on European countries cause quotations on foreign pulps to exhibit a stronger tone.

RAGS. There has been no improvement in the paper making rag situation in New York this week. The market continues dull. Paper mills are coming into view as buyers only when actually and immediately in need of rags, and even then they are offering low prices which serve to dishearten dealers. Mills in a majority of cases appear simply not to want rags, regardless of the prices at which they can buy, and there is of course an easy tone to values under such circumstances.

Roofing rags have moved down further in prices. Sales of No. 2 satinets to felt paper mills have been noted at 80 cents per hundred pounds f.o.b. New York, while cloth strippings have sold down to 1.05 cents a pound New York. Old whites and blues are in very slow demand, and new cuttings of most kinds are neglected by buyers. Prices are largely nominal, and those quoted by dealers mean little because buyers can doubtless do better should they make firm bids at lower levels.

PAPER STOCK.—Some grades of old paper have again declined, notably the better grades of paper stock, whereas others hold at about previous quotation-levels. Old kraft paper has sold this week at 1.60 cents per pound f.o.b. New York, denoting a drop of some $4 or $5 per ton, and white blank news cuttings are down to 1.70 cents New York. The fact that news cuttings are fetching higher prices at present, because usually the reverse is true. White shavings are quoted by local dealers at around 3.75 cents per pound New York for No. 1 hard and 3 cents for No. 1 soft shavings. Old books and magazines are selling at 1.20 cents New York, folded newspapers at 50 to 55 cents a hundred pounds, and No. 1 old mixed paper at 37 ½ to 40 cents a hundred pounds.

OLD ROPE AND BAGGING.—Old Manila rope continues in fair demand from paper mills and is bringing an average of 4.75 cents a pound at shipping points for No. 1 rope. Old bagging is not wanted by consumers and is purely nominal in price. No. 1 scrap bagging is readily available to mills at 85 cents a hundred pounds f.o.b. dealers' points but there are few or no buyers in sight at this or lower figures.

GOVERNMENT LUMBER CAMP.

S.S. Marie, Ont.—Dec. 13.—A permanent lumber camp is being opened up at Mile 149 on the Algoma Central by the Ontario Government under the supervision of S. W. Butt, superintendent of bridge construction from Sudbury North. It is proposed to take out for Government needs 250,000 feet of timber this year, and portable mills are being installed.

Switzerland is electrifying her railways to save importing coal.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P.Q., December 22, 1921.** **No. 51**

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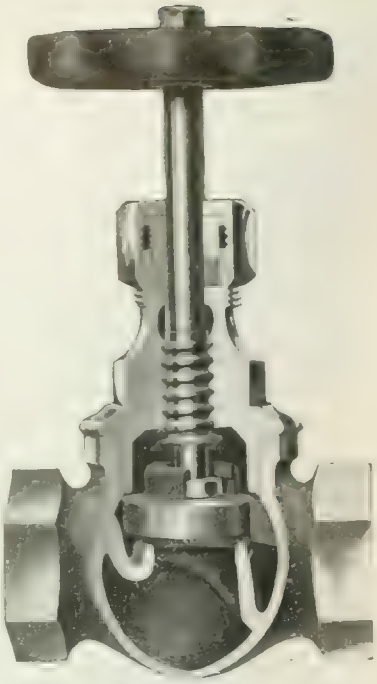

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THE FIRST CHRISTMAS

Nineteen hundred and twenty years ago, "Joseph went up from Galilee, out of the city of Nazareth, into Judea, unto the city of David, which is called Bethlehem; (because he was of the house and lineage of David) to be taxed with Mary, his espoused wife, being great with child. And she brought forth her firstborn son, and wrapped him in swaddling clothes, and laid him in a manger; because there was no room for them in the inn.

"And there were in the same country shepherds abiding in the field, keeping watch over their flock by night. And, lo, the angel of the Lord came upon them, and the glory of the Lord shone round about them; and they were sore afraid. And the angel said unto them, 'Fear not: for, behold, I bring you good tidings of great joy, which shall be to all people. For unto you is born this day in the city of David a Saviour, which is Christ the Lord. And this shall be a sign unto you: Ye shall find the babe wrapped in swaddling clothes, lying in a manger.' And suddenly there was with the angel a multitude of the heavenly host praising God, and saying, 'Glory to God in the highest, and on earth peace, good will toward men.' "

And now after centuries have passed, the world is really just beginning to appreciate and apply the message that this child came to bring. The road has been rough and weary and progress has been marked with many a disaster and many a discouragement. Perfect peace has by no means yet been achieved, but the promise is beginning to be realized that peace will come when men are of good will. There is no doubt that the majority of men are of that class and the leaders of the great nations of the world are now bending their best efforts to bring about the establishment of that happy state of affairs which was promised so long ago.

There is still much distress in the world and an unfortunately large part of it lies close to us. So, in wishing our friends and readers a very Merry Christmas, we add the hope that each of us may be the means of brightening the day for someone else less fortunately situated.

Manufacture of Coated Paper

By Wm. T. SCHENCK, Champion Coated
Paper Co., Hamilton.

I have been in the coated paper business for about 27 years, and have seen many changes in its manufacture in that time. If we were to go back to the ways of 20 or 25 years ago, we would soon go out of business. The "coating game," like every other business, never ceases to improve.

We will have a little discussion on the manufacture of coated papers.

The first thing to bear in mind is that the manufacture of coated papers is an art from beginning to end, but we very often forget this. The fundamental thing in making good coated papers is this: The raw stock must be made just right for each grade. We must not forget that we are going to make something artistic out of this raw stock. Its requirements are mostly—good formation uniform weight, free from fuzz, and the proper uniform colour. Starting with this, we are on the right track to begin this work of "art going."

Mixing The Coating Materials.

Then comes the mixing of the coating and tinting, etc. The colour mixer must know how to properly mix his coating materials, and get them uniform, or we are going to turn out a very poor lot of paper, even if all the other conditions in the process are good.

We next come to the coating machines. The machine runner must positively know how to apply this coating material to the best advantage, and see to it that it is properly coated, as well as uniformly, and must be an artist in his line, as this is one of the important steps in the manufacture of coated papers. Of course, the different mills have many different methods of doing things, and many are the small things that the coater man does to make an artistic sheet. Our method with the men has always been to try to impress upon them the fact that this is a "work of art," and that they are not ordinary workmen, but artists. One cannot be too emphatic with the work on the coating machines; it takes skill.

The next step is drying and reeling, which is mostly mechanical—then comes the finishing of the paper. It is run through super-calenders—you all know what they are—here is where the real artist gets in his reel work; he can either make or mar at this point. A good calender-man must be able to tell at a glance, or by the "feel" of the sheet as it is going through the calender, if it is all right, or not; he must be on the "look-out" at all times and watch how "she is calendering;" also, the trained eye can detect a spot on the sheet while it is running. The calender-man must also watch closely for any change in the moisture of the sheet running, in order that it is not "crushed" or "blackened." In fact, this part of the operation is one of the very important ones, and the greatest care must be taken at this point. The finish and pressure on these machines should always be established by the foreman, and the calender-man should be given a sheet by which to run; if he is a good man, he will closely follow the sample.

Then comes the cutting-off process, most of the paper is laid off by mechanical means. All coated papers are sorted one sheet at a time and all defective paper taken out. Now, right here is where we are all weak; that is, all coating mills must rely upon the judgment of the sorters—and here is where one has the human element with which to contend. The sorters are supposed to take out all the bad paper, but—do they? We have established a very thorough way of inspection, but at that, some defective papers will slip in, and here is where we "get in bad" with the printer.

The Finish of the Paper.

Right here is where I would like to go on record about these different grades of papers. I have talked with many printers on this subject, and had quite an argument with that bunch of printers at Chicago, in regard to the present highly finished surface, and they all agreed with me that a semi-dull velvet finish was much more to the point, and that it enabled the printer to bring out the fine half-tones, and make an artistic job of it. They get much better results with the semi-dull than with the very high glossy finished papers. papers. It is impossible to get an extremely high gloss without destroying the surface for printing—that is, for good printing. A more or less crushed and hard sheet is the result—the ink will not dry, and the colour of the cut will show grey and blurred instead of clean and sharp. Of course, the dull finish will require a little more ink, but it will be well paid for in the results obtained.

High Glossy Surface Papers

I feel that in the near future, the bulk of coated papers will be made dull finish or semi-dull and the high glossy surface will gradually disappear. A dull surface on coated papers is much more difficult to manufacture than the high finish, as the printing surface must at all times be smooth, in order to get good printed results. I find that since my meeting with the Chicago printers last fall, that our business on dull coated papers has more than doubled; in fact, "it seems to be the go."

I would like to quote here an article from our Year Book of June, 1920, by Mr. P. J. Massey, Superintendent of W. F. Hall Printing Company, Chicago. He says:

"I would like to ask, why do paper makers exert so much effort and time, with the attending necessary waste, to get an excessively high finish and mirrored surface on their papers? I am sure that every press room executive present will agree with me when I say that you are not fulfilling the press room requirements by so doing, but that you increase their troubles, in addition to destroying the eye-sight of the general public."

Reports from various International Paper Company mills indicate that working forces are almost up to normal size and that near capacity production has been reached in practically all of the plants. It is claimed that many of the men who went out on strike last May have returned and that the new men filling vacancies left by those who remained out have been filling the places acceptably.

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*Read at Spring convention of the American Pulp and Paper Mill Superintendents Association.

Thiocyanates as Solvents for Cellulose

By H. E. WILLIAMS.

It has been known for some time that a concentrated solution of zinc chloride or of mercuric-barium iodide will dissolve cellulose, and Deming (J. Amer. Chem. Soc., 1911, xxxiii 1515) has shown that cellulose will dissolve in solutions of certain metallic chlorides strongly acidified with hydrochloric acid; in the latter case the cellulose is profoundly modified by the hydrolytic action of the acid before solution takes place.

Dubosc (Bull. Soc. Ind. Rouen, 1905, 318) first noticed the action of certain thiocyanates on cellulose, and states that solutions of ammonium and potassium thiocyanates dissolve cellulose, forming a cellulose thiocyanic ester. P. Weimarn (G. P. 27,882) claimed the action of the solution of any neutral salt on cellulose—the term action being here used in its widest sense. No technical developments followed from these observations.

The subject matter of this paper is the outcome of work carried out some years ago (1907-8) on the properties of the metallic thiocyanates.

Several years later (1916), although the author was unaware at the time of the work of the investigators mentioned above, his attention was directed to his previous observations in a systematic study of the concentrated solutions of metallic thiocyanates, and it was found that a number of these solutions (e.g., of strontium, magnesium, manganese, lithium, etc., thiocyanates) when heated were capable of dissolving cellulose.

Nature of the Solutions Used.

These results were then subjected to a critical examination, and a theory of the action of these solutions on cellulose was evolved by means of which it is possible to predict the action in terms of definite physical constants, a detailed description of which has been given elsewhere (Manchester Lit. and Phil. Soc., Apr. 12, 1921) and will shortly be published. It will suffice here to state that the results of the work demonstrated that to dissolve cellulose, a concentrated aqueous solution of neutral or acid salt must consist of a liquid hydrate—an associated molecular complex of salt and water—which must have a viscosity above a certain minimum and a positive heat of dilution between certain well-defined limits.

By the aid of this knowledge it was possible to make any of the thiocyanate solutions dissolve cellulose, either singly or in admixture with one or more other thiocyanates. For example, sodium thiocyanate solution is not a cellulose solvent at any concentration under atmospheric pressure, the viscosity of its most concentrated solution falling below the minimum required. As this salt solution has a positive heat of dilution when concentrated, it follows that additions which increase its viscosity but which do not reduce its heat of dilution will render the solution capable of dissolving cellulose. This result may be accomplished by the addition of sufficient manganese, aluminum, zinc, or other thiocyanate, the two latter not being of themselves solvents for cellulose. The same result may also be obtained by dissolving in the solution the insoluble or sparingly soluble thiocyanates, such as the mercuric, cuprous, cadmium, silver, or lead salts.

The possible industrial applications of these observations include the spinning of filaments, mercerization of cotton fabrics, parchmentization of paper, and the preparation of "vulcanized" fiber.

Of all the cellulose solvents examined, the concentrated solution of the calcium thiocyanate has the most profound and far-reaching effects, and as it has the further industrial advantage of having a cheap base, it is the one that has been most closely studied from the industrial standpoint.

Solutions Must be Neutral or Acid.

As mentioned above, cellulose is soluble in the concentrated thiocyanate solution only if neutral or acid, careful investigation having shown that if the solution is alkaline, no solution of cellulose takes place. This result has been found to be true for all the thiocyanate solutions. Calcium hydroxide dissolves in calcium thiocyanate solution in increasing amounts as the concentration of the thiocyanate rises, and a solution containing 2 Gm. or more of calcium hydroxide per 100 Cc. may be obtained. The alkali may be neutralized by careful addition of dilute sulphuric acid, or by diluting the solution to a specific gravity of 1.2, when practically the whole of the hydroxide will be precipitated in the free state, and the solution may be filtered and re-concentrated.

A solution of calcium thiocyanate of such a concentration that it boils between 135° and 150° Cent. will dissolve bleached cotton or chemical woodpulp when heated to 80° to 100° Cent. The fiber first swells and then gradually passes into colloidal solution, no trace of the original fiber being visible when a drop of the solution is examined under a microscope; on cooling, the mass sets to a clear firm jelly. That a solution boiling below 133° Cent. or one boiling above 150° Cent. will not dissolve cellulose may be easily demonstrated by adding a few fibers of chemical woodpulp to a neutral solution of the thiocyanate boiling, say, at 110° to 115° Cent. and allowing the mixture to boil slowly on a sand bath; it will be noticed that, apart from some swelling action, no solution of the cellulose takes place as the temperature of the boiling point rises during concentration until it reaches 133° to 134° Cent. when the fibers pass into solution in a few seconds. If the thiocyanate solution is further concentrated and the cellulose then added, it will be noticed that solution of the cellulose becomes more and more difficult, and when added to a solution boiling at 150° Cent., or over, no cellulose passes into solution, although the fiber is strongly parchmentized and swollen.

Theory of Hydration.

This retardation of solution ending in complete stoppage, is not due to the increased viscosity of the solution, which would naturally retard the rate at which the cellulose dissolves, but to a more deeply seated cause. In a solution of a very soluble salt with a positive heat of dilution, as the amount of total solids increases on concentration, the remaining water must be

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*Presented at the annual meeting, at McGill University, Montreal, of the Society of Chemical Industry. Reprinted from the Journal of the Society, Oct. 15, 1921.

held by the salt with greater and greater affinity. If therefore, such a solution will bring about a chemical reaction between another compound and water, it is obvious that as the concentration of the solution increases, the salt will tend to hold the water in a stronger union, and thus retard more and more the desired hydrating action. A point may therefore be reached where the affinity of the water for the salt is so great as to transform any hydrating action into a dehydrating one. This point appears to be reached in the hydration of cellulose by calcium thiocyanate when the concentration of the solution rises to the point at which the b.p. is 150° Cent. and over. The addition to such a boiling solution containing cellulose of a few drops of water sufficient to lower the boiling point to 148° to 149° Cent. will cause solution of the cellulose in a few seconds.

When cellulose is dissolved in the neutral calcium thiocyanate solution boiling between 133° and 140° Cent. the fibers first swell enormously, the whole mixture becoming intensely thick and gelatinous, and very difficult to stir if the proportion of cellulose is 3½ to 4 Gm. or more per 100 Cc. of solution, but on further heating the mixture gradually melts down to a thick fluid. The addition of a weak acid such as glacial acetic acid, in the proportion of 2 to 4 Gm. per 100 Cc. of solution, enables the cellulose to dissolve without passing through this intense gelatinous stage, and the mixture may be easily stirred during solution. By this means solutions of 10 to 12 Gm. of cellulose per 100 Cc. of solution may be as easily and readily made as those of lower strength.

For the preparation of a concentrated solution of cellulose the most suitable calcium thiocyanate solution is one which boils at 134° Cent., or slightly over, but not exceeding 140° Cent.; 3 to 4 Cc. of glacial acetic acid per 100 Cc. of solution is then added, followed by 5 to 10 Gm. of cellulose according to the strength of the solution required, and the mixture allowed to stand until fibers become thoroughly wetted and impregnated with the solution. The mixture is then heated to 100° Cent. and maintained at that temperature until the fibers become separated and highly swollen, and the whole liquid thickly fluid. The temperature is then raised to 110° to 120° Cent. and the mixture stirred until solution results. The temperature should not be allowed to rise much higher or the solution may become distinctly brown in color.

A portion of the calcium thiocyanate solution may be replaced by a solution of certain salts which do not react chemically with it, but maintain its boiling point and other necessary properties, without altering the solvent properties of the solution for cellulose. Such a solution of mixed salts will, so far as present experience goes, serve the same purpose as a cellulose solvent as the pure calcium thiocyanate solution.

There are but few salts capable of fulfilling this function, for such a salt must have high solubility in water, high boiling point in concentrated solution (over 133° Cent.), it must be viscous and have a positive, but not too great heat of dilution, and it must not act chemically on the calcium thiocyanate.

These properties and conditions are fulfilled to an admirable extent by calcium chloride, which further has the advantage of cheapness. A solution of this salt boiling at 133° Cent. may be mixed with calcium thiocyanate solution boiling at 133° Cent. in the proportion of one volume of calcium chloride solution to two volumes of calcium thiocyanate, without in any way interfering with the properties of the calcium thiocyanate solution for dissolving cellulose. The same maximum amount of cellulose may be dissolved in the mixed solution, whether neutral or acidified, with equal ease. A larger proportion of calcium chloride solution cannot be employed when working with solutions of the concentration mentioned above, without the viscosity of the mixed solutions fallng below the minimum necessary for a cellulose solvent.

If, however, both the solutions are concentrated until the boiling point rises to 140° Cent. under normal pressure, equal volumes of calcium chloride and calcium thiocyanate solutions may be used. This mixture will be found to dissolve the same maximum amount of cellulose and with the same ease as the original pure calcium thiocyanate solution boiling at 133° Cent.; in fact, in some respects it is superior. The substitution of greater amounts of the calcium thiocyanate solution by calcium chloride solution has not been attended with success, and conclusions based on theoretical considerations render it unlikely that the substitution can take place to any great extent, since the heat of dilution of the mixed solutions is too great.

A solution of cellulose in the calcium chloride-thiocyanate solution prepared as above described, containing about 7 Gm. of cotton or wood cellulose per 100 Cc., and kept warm, may be spun through a fine orifice for the preparation of cellulose filaments. The best precipitating medium for spun threads so far found is to dilute alcohol (50 to 90% C_2H_5OH). The precipitated filament, which is firm and easily handled, may be washed and dried in the usual manner, yielding threads which are strong and lustrous.

In the methods described above, the cellulose dissolves in the thiocyanate solutions only on heating, but C. F. Cross, F.R.S., who has taken a deep interest in the results of the work, has made the interesting observation that solution of the cellulose may be effected in the cold by the following method. Chemical woodpulp is allowed to soak for some hours in the cold in a mixture of four parts of calcium thiocyanate solution of sp. gr. 1.38, and one part by volume of 40 per cent formaldehyde. The fiber swells in the mixture, and no other apparent change takes place, but when the solution is diluted with an equal volume of cold water, the cellulose rapidly passes into solution. If the original mixture, after standing but before dilution, is gently warmed, and small quantities of water are gradualy added, it becomes thicker and thicker until finally all the cellulose passes into solution. Solutions containing up to 4 percent of cellulose have been obtained in this manner.

As similar results may be obtained by using solutions of zinc chloride, strontium thiocyanate; or lithium thiocyanate, etc., of appropriate strength, mixed with 25 percent of 40 percent formaldehyde, it would appear probable that the reaction is a general one. The partial substitution of calcium chloride solution for the calcium thiocyanate in the formaldehyde mixture has a retarding effect, probably due to its powerful dehydrating action.

If the thiocyanate solution is diluted with the same amount of water in place of the formaldehyde solution, no apparent effect is observed and no solution of the cellulose takes place on dilution.

The addition of the formaldehyde to the thiocyanate solution lowers the surface tension, but does not materially lower the viscosity or the heat of dilution of the mixture; the addition of water, however, while hardly altering the surface tension, considerably lowers the viscosity and the heat of dilution.

If the cellulose is soaked for some hours in calcium thiocyanate solution of b.p. 134° Cent., and water is then added to bring the sp. gr. to 1.26 (b.p. 115° Cent.), solution of the cellulose occurs on heating to 60° to 70° Cent.

A careful examination of the action of calcium thiocyanate in the cold on chemical woodpulp has shown that whereas no cellulose passes into solution when digested either with very dilute or very concentrated thiocyanate, traces are dissolved in the slightly less concentrated solutions, rising to a maximum of about 0.5 percent of the added cellulose in the solution of sp. gr. 1.3 and gradually falling to zero in the weaker solutions.

If the thiocyanate is diluted with varying amounts of formaldehyde in place of the water, gradually increasing quantities of cellulose are dissolved on the addition of water, rising to a maximum of 100 per cent and then rapidly falling off to zero. The curve expressing the percentage of cellulose dissolved for each dilution of the thiocyanate solution with formaldehyde reaches its maximum at the same point as the thiocyanate-water curve.

If chemical woodpulp be worked in a beater for twenty-four hours with the cold thiocyanate solution of sp. gr. 1.3 (b.p. 120° Cent.) a considerable portion of the cellulose may be found in solution after filtration. The remainder of the fiber passes into apparent solution on heating to 60° Cent., setting to a firm jelly on cooling. There is still some doubt as to whether this jelly is a true colloidal solution, as although the fibers are invisible under the microscope in the warm solution, they appear to be faintly outlined in the cold solution as enormously swollen, and distinct evidence of fiber structure may be perceived in the precipitate obtained on dilution.

Parchmentizing Action.

If unsized paper is passed through a solution of calcium thiocyanate, or better the 50/50 calcium chloride-thiocyanate solution concentrated until the boiling point rises to 155° to 157° Cent., and cooled to 130° Cent., an excellent parchment paper or vegetable parchment results. The paper should be preferably of open web and a good absorbent, and is passed through the bath at such a rate that it is in contact with the hot liquid for not less than 30 secs., then washed in running water and dried over steam-heated rollers.

A weaker thiocyanate bath, which would be a cellulose solvent, obviously cannot be used with any great success for the preparation of parchment paper. It will partially dissolve the cellulose on the surface of the paper; on washing the paper the light flocculent film of cellulose hydrate on the surface of the sheet will be removed by the water before precipitation of the gel occurs, thereby causing loss. On drying a paper so treated and washed, the precipitated cellulose hydrate will shrink considerably, crack, and expose some of the untreated fibers underneath, and thus the paper will not be rendered air and grease proof.

At the same time it is only permissible to attack the surface of the paper, for otherwise it would become too soft to handle in the washing operations, and would dissolve or disintegrate on more prolonged treatment in the baths. It is therefore perferable that the parchmentizing solution should not be a solvent for cellulose, and such a solution is obtained by concentrating the calcium thiocyanate-chloride solution to a boiling point of 155° Cent.

From a large number of experiments it has been found that the temperature at which such a solution has the most marked parchmentizing effect is 130° to 135° Cent., though it may be varied from 125° to 140° Cent., with but little effect.

At the present time parchment paper is manufactured by passing unsized cotton rag paper through a bath of sulphuric acid (sp. gr. 1.7) maintained at 10 deg. Cent. The paper must be passed through the solution at such a rate that it is not in contact with the acid for more than about ten seconds; the temperature of the bath must not be allowed to rise above 10 deg. to 15 deg. Cent., and the paper must be very rapidly washed. If the temperature of the bath is allowed to rise, or the paper kept in contact with the acid for more than about fifteen seconds before washing, the action of the acid becomes so great that the paper partially dissolves, becomes soft, and cannot be handled in the washing operation.

The use of the calcium chloride-thiocyanate bath, prepared as above, for parchmentizing, has the advantage that the time of contact with the parchmentizing bath may be prolonged, and the temperature may be carried between wide limits; also the washing operation may be delayed for any length of time without damage resulting.

Again, sulphuric acid chars and blackens ligno-cellulose and can therefore only be used to parchmentize pure cellulose paper; but any class of unsized paper may be parchmentized with the thiocyanate solution, whether it consists of pure cotton rag, or contains lignocellulose, such as mechanical woodpulp or jute, etc. The process may therefore be used for parchmentizing and at the same time strengthening wrapping paper, jute halfstuff, etc.

It is, of course, necessary to recover the chemicals carried over by the paper from the parchmentizing bath. The amount of liquid carried over into the washing plant is very considerable; experiment has shown that after passing the squeezing rollers, whether sulphuric acid or the calcium chloride-thiocyanate solution is used, the amount is roughly 4 to 5 times the weight of the paper used.

In the sulphuric acid process the paper, after leaving the parchmentizing bath, must be plunged as quickly as possible into an excess of cold dilute acid to stop the action of the strong acid on the paper. This difficulty does not arise with the thiocyanate process, as the paper after leaving the parchmentizing bath may be washed on the complete counter-current principle, with the recovery of 95 percent of the solution at a concentration of 1.33 sp. gr. (i.e., half the concentration of the original parchmentizing bath).

J. Huebner, of the Manchester College of Technology, has experimented with paper after parchmentizing with the calcium chloride-thiocyanate solution, by exposing it to the action of various vapors for different lengths of time; considerable improvement was obtained in the strength of the paper. The bursting strain of the original paper was 8 lb., or if washed immediately after parchmentizing in the usual manner, 35 lb. After exposure to the atmosphere for 3 hrs. the bursting strain was 52 lb., 5 hrs., 51 lb., 20 hrs., 55 lb., 2 days, 62 lb., 7 days, 60 lb. After exposure to ethyl alcohol vapor for 3 hours the bursting strain was 33 lb.; 5 hrs., 48 lb.; 20 hrs., 56 lb.; 2 days, 64 lb.; 7 days, 69 lb. After exposure to acetone vapor for 3 hrs. the bursting strain was 38 lb., 5 hrs., 42 lb., 20 hrs., 59 lb.; 2 days, 64 lb.; 7 days, 75 lb. After exposure to methyl alcohol vapor for 3 hrs. the bursting strain was 38 lb.; 5 hrs., 44 lb.; 20 hrs., 45 lb.; 2 days, 61 lb.; 7 days, 71 lb. If washed in alcohol instead of with water the bursting strain was 55 lb.

Preparation of Vulcanized Fiber.

The paper leaving the parchmentizing bath is passed through a second bath at 46 deg. to 60 deg. Cent. containing the same mixture of calcium thiocyanate and chloride but of slightly lower strength (namely b.p. 135 deg. to 140 deg. Cent.), then through squeezing rollers, and rolled up on a drum of large diameter; when the required thickness is obtained the mass is heated for half an hour at 120 deg. to 130 deg. Cent. cooled, washed, and dried. In this manner a very fine vulcanized fiber results resembling vegetable ivory in hardness. It can be sawn, turned, and tapped, and will take a very high polish. The dried mass contains no indication of the original layers of papers, nor are any of the fibers of the paper visible, and there is no tendency to split in the direction of the layers.

The passage of the paper through the second and weaker bath after parchmentizing is necessary, because the surface of the parchment has feeble adhesive properties, and it is difficult, if not impossible, to obtain a compact mass by superimposing and pressing a number of such sheets. In the passage through the somewhat weaker bath the surface of the paper is wetted with a solution which will dissolve cellulose when heated, but the temperature of this bath is kept below the solvent point. When the prepared mass is subsquently heated this solution dissolves some cellulose on the surface of the paper and cements the sheets together uniformly and completely; on cooling, the fiber sets in a matrix of jelly.

The preparation of the vulcanized fiber at present on the market is effected by means of a concentrated solution of zinc chloride. Sulphuric acid is useless for this purpose, as the solvent action of the acid is so rapid that it has been found impossible to cement more than two or three layers of paper together before it pulps. In the zinc chloride method, the paper is passed first over a heated drying cylinder into a bath of concentrated zinc chloride of sp. gr. 1.8 at 40 deg. Cent., the concentration and temperature of the bath varying slightly according to the quality of the paper used. It is then rolled up over a large heated drum to the required thickness. The treated fiber is washed in zinc chloride baths of successively diminishing concentration until it contains less than 0.1 percent of zinc chloride. This washing process is difficult owing to the great tendency of the zinc chloride to hydrolyze, and deposit zinc hydroxide and oxychloride in the fiber; it is very slow and cannot be hastened, or blisters may be produced in the fiber and an inferior product result. For sheets ¼ in. thick the washing operation is said to take 3 to 4 weeks, and for 2-in. sheets 6 to 8 months. The washed fiber is dried at 40 deg. to 60 deg. Cent., pressed, and sometimes calendered.

In the calcium thiocyanate method the solution required is less concentrated, and the washing operation is rapid and complete. The certain absence of zinc or other metallic hydroxide or chlorides, is of advantage in using the fiber for electrical insulators, etc.

Mercerizing Action.

Strong mercerizing effects may be obtained on cotton fabrics by immersing them in calcium thiocyanate solution; the fabric shrinks and lustre and increased dyeing properties are obtained. If immersed in hot solutions the lustre is decreased and the fabric becomes stiff and is permanently altered so that after washing it still retains its stiffness. Treatment in the cold solution, however, leaves the fabric soft and pliable.

Experiments with cotton hanks in cold calcium thiocyanate solution of decreasing strength show that the best efforts are obtained with a solution containing 60 Gm. of calcium thiocyanate per 100 Cc.; the cotton shrinks about 16 percent of its original length when added to the bath dry, and 21 percent when wetted out first. With both stronger and weaker solutions the effect decreases, and scarcely any effect is observed with calcium thiocyanate solution of sp. gr. 1.25.

A large number of experiments on cotton hanks have been carried out, which show that the effects such as shrinkage, dyeing properties, etc., vary with the concentration of the solution, time of immersion, temperature, and the composition of the solution. Different effects are obtained with different thiocyanates, and even by the addition of small amounts of other thiocyanates.

The effects obtained on cotton by these means have so far not proved superior to those produced by the action of caustic soda, and as the latter is the cheaper this process does not offer any apparent advantage. The possible variations of the number of factors involved are, however, so great that further investigations may bring to light effects of industrial interest at present unsuspected.

Action on Raw Jute.

If raw jute is boiled for ½ hr. in calcium thiocyanate solution of sp. gr. 1.3 and washed and dried the fiber bundles are more or less broken down, and the fibers themselves become soft and curly, while still retaining their strength. With stronger solutions the action is too severe, the fibers becoming gelatinous and partially dissolving; in weaker solutions little effect is seen.

Preparation of Calcium Thiocyanate.

It will not be out of place here to give a short description of the manufacture and properties of calcium thiocyanate. In the purification of coal gas, the cyanogen compounds may be extracted in the form of ammonium thiocyanate by scrubbing the crude coal gas, before the removal of the ammonia, in a specially designed scrubber containing spent oxide kept moist with water. The mechanism of the reactions involved has been fully described in the technical literature. Practically all the hydrocyanic acid in the crude coal gas is recovered in the form of ammonium thiocyanate, which is periodically removed as a solution of 15 to 20 percent strength by spraying the scrubber with water. This method has been in commercial use in England for some years. The solution of crude ammonium thiocyanate is readily converted into the calcium salt and purified by special, but simple methods.

Calcium thiocyanate may also be readily obtained by fusing calcium cyanamide with sodium chloride, dissolving the melt in water, digesting the crude sodium cyanide with free sulphur to convert it into sodium thiocyanate, filtering and concentrating the solution. During the course of the evaporation, the sodium thiocyanate will react by double decomposition with the calcium chloride present in the solution forming sodium chloride which will be deposited quantitatively as fine crystals, leaving a solution of pure calcium thiocyanate.

Calcium thiocyanate may also be obtained from calcium cyanamide by preparing thiourea as an intermediate product.

Calcium thiocyanate is a very soluble and deliquescent salt, but may be obtained in crystals containing three molecules of water. The concentrated aqueous solution is very viscous, and dissolves not only cellulose, but also natural silk, acetyl-cellulose, and gelatin; it has no action on wool. It dissolves a number of metallic hydroxides such as lead, zinc, cobalt, nickel, cadmium, stannic and ferric hydroxides, all of which are reprecipitated on dilution. Tricalcium phosphate will dissolve to a small extent in the hot, concentrated solution, while on the other hand certain water-soluble salts, such as sodium chloride or potassium chromate, are practically insoluble.

The Bad Odor from Sulphate Pulp Mills

By BROR N. SEGERFELT

Ever since the discovery of the sulphate pulp process down to the present time energetic efforts have been made to overcome the evil smelling gases that this process envolves. In Sweden a sulphate mill, Orebro Pappersbruk, in the years 1902-1904, had to answer in a lawsuit against the towns people, with the result that the owners of the mill were condemned to build a high chimney to help eliminate the bad odor.

In connection with the above mentioned mill Professor Klason, and Klason and Henry Person made the first systematic investigations into the nature of the evil smelling gases evolved by the sulphate process. They proved that the bad odor was caused by organic sulphur compounds, which were formed by the sodium sulphide in the white liquor when cooking the wood in the digester.

It was especially the formation of methyl mercaptan and methyl sulphide which by their presence in the atmosphere caused the odor. Methyl mercaptan is the more evil smelling of the gases, and the more this compound is diluted with air the worse it smells. Both gases are highly volatile at ordinary temperatures; methyl mercaptan with a boiling point of 6 degrees Cent., and methyl sulphide with a boiling point of 38 degrees Cent.

It is proved that these gases in mixture with air, as they commonly will be during the manufacturing process, have no evil physiological effects. On the other hand, when concentrated, as they come from digester or evaporator, people remaining in a room filled with those concentrated gases for a certain length of time are affected in the eyes. This is, however, more as a result from the methyl alcohol which is present in considerable quantity in the relief and evaporator gases. The methyl alcohol vapor is proved to have severe constitutional effects on the whole human organism, and especially the eyes. But the alcohol vapors can easily be condensed, and the uncondensed remainder has never seemed to cause any evil effects.

During the sulphate process the obnoxious gases are evolved: (1) in the digester, (2) in the evaporator, and (3) in the furnace, and released periodically by relieving the pressure of the digester, and when blowing off the pulp, and continously from the evaporators and furnaces.

Klason and Segerfelt* in a research work have made series of experimental cooks, especially in order to determine: (1) The amount of organic sulphur compounds and methyl alcohol; (2) how the percentage of sodium sulphide in the white liquor influences the amount of methyl mercaptan, methyl sulphide and methyl alcohol; (3) how to explain benefits in stronger fiber derived from adding sulphur or soldium sulphide to the white liquor.

It may be of interest to mention the method used to determine quantitatively the amount of hydrogen sulphide and methyl mercaptan in the gas. The method was first used by Klason and is founded on the absorption of the gases in a solution of mercuric cyanide, $Hg(CN)_2$ by the reactions.

$$Hg(CN)_2+2HSCH_3=Hg(SCH_3+2HCN$$
$$Hg(CN)_2+H_2S=HgS+2HCN$$

Thus there are formed mecuric mercaptan, mercuric sulphide and hydrocyanic acid. Both the mercuric compounds are insoluble and almost unchangeable in the atmosphere. The precipitate has to be filtered, dried at common temperature and weighed. To determine the mercaptan the weighed precipitate is treated with boiling hydrochloric acid. HgS is not dissolved while $Hg(SCH_3)_2$ is decomposed thus:

$$Hg(SCH_3)_2+HCl=HgSCH_3Cl+HSCH_3$$

The main results of Klason & Segerfelt's above-mentioned research work are as follows:

(1) The formation of chemical compounds in the sulphate cooking process consists principally in that the gummy hydro-carbons are transformed into saccharin acids, which neutralize the alkalis, and, further, that the high large lignin molecule is parted in smaller ones, which are dissolved in the alkali by the presence of 2 hydroxyl complexes therein, the quantity of which increase a little by the saponification of the methoxyl complexes of the lignin.

(2) Besides the said saponification of the lignin there is always formed methylalcohol as well as methyl mercaptan and methyl sulphide, the two latter compounds in smaller quantities than the methyl alcohol. If the amount of alkali is not sufficient, the percentage of methyl mercaptan increases, and, on the contrary, the percentage of methyl sulphide increases, if the amount of alkali becomes greater. Under the same conditions a wood rich in rosin yields more mercaptan than a wood poorer in rosin.

(3) Straw of wheat contains less percentage of hydroxyl complexes and gives also, by the sulphate

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*Om det kemiska forloppet vid fram-stallning af sulfatcellulosa. Archiv for kemi, mineralogi och geologi. Band 4, No. 6.

cooking process, a far less quantity of methyl mercaptan.

(4) When the cooking process is carried on with white liquor, as commonly used in practice, about half of its amount of sulphur is organically combined with the lignin in the black liquor. It is on account of this fact and by the formation of volatile methyl sulphur compounds that Na_2S in the cooking liquor will only by degrees be effective as NaOH. In this circumstance we find the protecting effect to the cellulose fiber, that Na_2S evidently exercises.

Klason and Segerfelt found that the sulphur in the white liquor is used up as follows:

	Per cent.
Combined with volatile organical compounds	15.0
Combined with lignin	51.8
Combined as Na_2S	16.8
Loss	16.4
	100.0

The loss is supposed to come from an oxidation of sodium sulphide.

As to these figures, most of the sulphur compounds are to be found in the black liquor after having been blown off with the cook to the diffuser.

By sufficiently cooling the gas from the digester and mixing and diluting it with a greater amount of water, the gases will remain dissolved, and no particular odor is noticeable. The bad smelling sulphur compounds seem to be destroyed by an oxidation process in the presence of water, using up the oxygen dissolved in the water.

By treating the condensate from the steam evaporaters, where such are used, the smell from these, too, can be avoided, in the same way.

To abate the nuisance from the gas produced when the black liquor is evaporated and dried in a disk evaporator and rotary and burned in smelters, the question is rather difficult to solve.

Recommendations have been made to send the flue gases from the smelters or furnaces to the atmosphere through a high chimney. This will eliminate the bad odor in the vicinity of the mill, when the atmospheric conditions are favorable, but will never prevent tem to be noticeable at a longer distance from the mill.

To wash out the gases in scrubbers would be an expensive method, as the gases are greatly diluted with air and carbonic acid from the furnace. The scrubbers must be extremely large, the water supply great and the power consumption for fans and pumps too expensive. Also this method has never been tried out in practice as far as is known to the writer.

A clever management of the sulphate mill is the cheapest, and, I think, only way to minimize the bad odor, though one can not entirely eliminate it.

The main source of the bad odor comes from adding sodium sulphate to the evaporated black liquor, and Klason and Segerfelt have proved that the more sodium sulphate or salt cake is added, the greater the increase in the amount of organic sulphur compounds in the process. Klason and Segerfelt found that the loss of alkali must be kept down as much as possible. Not more than 20-25 per cent. of the alkali in the white liquor may consist of sodium sulphide. To keep down loss of alkali the diffuser and causticizing rooms must be in good condition. Should niter-cake, $NaHSO_4$, be used, the bad odor will always be increased, as much more of this salt must be added to cover losses than of salt cake, Na_2SO_4.

By running with high temperature in the furnace and having a suitable combustion chamber for the gases before entering the rotary, the best result will be gained. The sulphur compounds will be burned or oxidized to SO_2, and an almost odorless gas is discharged.

But by using a disk evaporator and rotary there will always be a destructive distillation of the organic substances, evolving great quantities of evil smelling mercaptan and sulphide. To avoid this is very difficult, and attempts have been made to burn these gases, but without satisfactory result.

Sundblad and Sandberg, Swedish paper-pulp engineers, have equipped their recovery-plants to eliminate the bad odor as far as possible with big furnaces, working with much air and wide blowing-pipe, and with big combustion chambers for the gases before entering the rotary. Instead of disk evaporators, the rotary is connected with boilers and economizers. In this way the destructive distillation of the black liquor is limited to the rotary only, and the result is a nearly odorless plant. Sulphate mills built and running according to this method in Sweden are: Karskars Cellulosafabriker, Skutskars Cellulosafabriker, Nensjo Sulfat Fabrik, Iggesunds Cellulosafabriker, Skoghalls Cellulosafabriker, among others. The output from these mills represents more than 100,000 long tons sulphate pulp 90 per cent. dry.

Summary:

(1) The bad odor from sulphate mills is evolved in the cooking process by treating wood with an alkaline liquor containing a certain percentage of sodium sulphide, and in the recovery process by evaporating and burning black liquor regained from the cooking process.

(2) The bad odor from the cooking process can almost be eliminated through cooling the gases sufficietly and diluting the condensate with a great amount of water.

(3) The bad odor will be less if a less amount of sodium sulphate is added to the smelters, and will always be serious if sodium bisulphate be used.

(4) The bad odor is almost eliminated in the recovery process by having a high temperature in the furnace and the combustion chamber, and by exchanging the disk evaporator for boiler and economizer. (Sundblad and Sandberg's method.)

(6) The bad odor is entirely eliminated when adopting the Rinman modification of Sulphate rocess, where no sodium sulphate at all is added. (This method is described in a paper by Bror N. Segerfelt, read at the annual meeting of the Technical Association of Paper and Pulp Industry, April 13, 1921. Technical Association papers, series 4, No. 1, printed in the Pulp and Paper Magazine, 1921.)

(See also Pulp & Paper Magazine, Dec. 8, 1921, p. 1233).

ANNOUNCEMENT.

The Pulp and Paper Magazine is pleased to announce that Guy Tombs Limited, have been appointed Steamship Ticket Agents for the Anchor-Donaldson and Cunard Lines, Canadian Pacific Steamships, French Line, Holland-American Line and White Star Dominion Line.

Lack of head work is responsible for many a "headstone" in the grave yard.

New Paper Sizing Method

A German Invention.

The blockade of Germany during the war compelled many industries to seek substitutes for materials. In most cases these efforts succeeded in sustaining the essential industries in spite of the lack of foreign rawstuffs. But while the arts and crafts in general returned after the blockade to the use of foreign materials, as far as the depreciation of German money allowed, some of the war-time inventions retain their value for peace times and promise successful working also in foreign countries. Among these may be reckoned the "Zellkoll-Amal" process, which has proven efficient for sizing fine papers in Germany.

As the paper mills became short of rosin, even in the first months of the war, many sizing materials were put out, the active agent of which was generally animal glue, or soluble starch, the sticky ingredient of certain seaweeds and mosses, or mixtures of these materials. Later on cumaron, a product of coal distillation, was used, or only alum was added to the paper stuff, without any organic sizing matter. Yet with none of these means could full sizing, i.e., perfect resistance to ink, be attained. The solutions of animal glue and starch paste receded almost completely with the backwater of the paper machine. A mixture of cumaron and animal glue proved satisfactory for the sizing of spinning and wrapping paper only, and alum alone became a common sizing for printing paper.

Soon the idea presented itself to perfect the sizing with animal glue, which for centuries has proved its value for tub-sizing, so as to make a good substitute for rosin in engine-sizing. In some of the German writing paper mills animal glue has for years been added to the rosin size with the effect of giving the papers a good touch. Yet in most of the mills they soon ceased with this addition, for they saw no effect from it. It seems that in most cases the composition of the water decided the success.

Economical Progress.

Help came to the mills at the right time with the invention of the Zellkoll-Amal Co. in Berlin, patented in Germany and in foreign countries, according to which paper pulp can be made hard-sized even without addition of rosin milk. The principal feature of the invention is that the animal glue is added to the pulp in the engine not in solution but as a jelly. This is disintegrated in the engine to finest particles in a semi-solid state, which cover the fibres and melt only when the paper web has been heated upon the driers to a certain degree. In this way the fibres are pasted together to a uniform body, and the paper is sized throughout. The glue is made into a jelly by addition of hardening matter, especially formaldehyde or formate of alum, either in the engine or before adding it to the pulp. The nature and quantity of the hardening agents decide the melting point of the jelly, and these can be adapted to the paper to be made. As the glue is added in a semi-solid state, it reaches the pulp almost completely; the process is therefore very economical.

Valuable China Clay Retention.

From the paper-maker's standpoint the invention became still more valuable by the observation that a much greater part of the loading, for instance china clay, talc, etc., which has to be added also to fine papers in order to increase their whiteness and smoothness and to make them better printable, remains in the paper sized with "Zellkoll-Amal" than in paper sized otherwise. (This effect is also included in the patent claims). The loading and the Zellkoll-size unite to an emulsion, and by this means the loading binds itself firmly to the fibre. While generally about 70 p.c. of the loading is lost, the loss with this process has been eventually confined to 20 p.c., and the loading sticks even in highly loaded papers so strongly to the fibres that these papers do not dust in the printing press, and the writing pen does not tear small particles from it. German and foreign patents cover this method of loading.

The specialists who worked on the perfecting of this process state that by it the sizing of paper pulp has been made an operation from which the element of chance has been ruled out.

Another feature of this process is that not sulphate of aluminium but formate of alum is used to fix the size upon the fibre. This salt is even capable of macerating the fibre without any size, so that paper made from it proves ink-resisting. Using formate of alum in combination with the animal glue sizing described above, results in another advantage: sulphate of barium can be precipitated in the pulp and fixed to the fibres. For this purpose one prepares the formate of alum by mixing solutions of formate of barium with sulphate of aluminium and adds this mixture to the solution of glue. Thus sulphate of barium (blanc fixe) is precipitated in finest distribution.

Papers sized in this manner are remarkably strong, hard, touchy and sounding. They have, if made from chemical pulp, the characteristics of rag paper. Fine papers, for instance, book, bank, writing, drawing, document and blue print papers, can profitably be sized in this way. Also, countries in which rosin is not a very dear commodity can use it, for the main advantage of the process is the high quality of the paper so sized in spite of the large amount of loading which it contains. Add to this in countries where glue is cheaper than rosin the possibility of using glue as sizing medium.

Sigismund Ferenczi.

(Reprinted from the China Clay Trade Review).

PRINTER WAS PEEVED.

Charley Harris, in the printing business, got slightly peeved at a letterhead from a doctor who wanted bids on several thousand letterheads, different sizes, different grades and different colours, and wanted the printing form held standing. So, Charley took his typewriter in hand and wrote:

"Am in the market for bids on one operation for appendicitis. One, two or five inch incision—with or without ether, also with or without nurse. If appendix is found to be sound, want quotations to include putting same back and cancelling order. If removed, successful bidder is expected to hold incision open for about sixty days, as I expect to be in the market for an operation for gall-stones at that time and want to save the extra cost of cutting."—*Kansas City Post.*

Every joy is gain and gain is gain, however small.—*Robert Browning.*

If the world is ever to be saved it must be saved through its childhood F. B. Meyer

British Trade News

(From Our Own Correspondent).

London, 7th Dec., 1921.

Mr. A. L. Dawe, who has become assistant to the general manager of the Canadian Export Paper Coy., in London, will find plenty of scope for his great abilities in the United Kingdom. He will arrive in the land of competition, where underselling, cheap products, as well as dear and high quality products of the best home and foreign mills, may give some thought for the vicissitudes which a market undergoes. But Mr. Dawe received his early tuition in the same school as Mr. Stanley Cousins, if I remember correctly, and the men Edward Lloyd, Ltd., put on the road take some beating. However, Mr. Dawe, is coming back amongst old paper friends—and he will find a change, no doubt, as most people do nowadays, particularly if they have been abroad for any length of time. It is rumored here that the general manager of the Canadian Export Paper Coy., will be absent for an indefinite period and that the staff is being overhauled.

Congratulations to Mr. Beck.

The recent descriptive articles written by Mr.. Edward Beck on his European visit were read with much interest here and the congratulations of the British pulp and paper men go out to him on his appointment as Secretary to C.P.P.A. His experience as a newspaper man and his experience recently obtained in Scandinavia will be valuable adjuncts to the Association. There is an old saying that newspaper men are paid for finding out the business of other people and Mr. Beck's writings on Scandinavia indicate that the C.P.P.A. have got the right man in the right place. On this side of the Atlantic we would like to see a little more of him so that he could enlighten the Dominion pulp and paper men on their chances in the British market—the details, of course, to be circulated privately for the benefit of members of the Association.

Is the Export Trade Studied?

From a Canadian point of view, this is a question that wants a good deal of thinking out. For some time past I have had an idea—and I hope I am wrong —that the men of the Dominion do not give the British market sufficient attention. There are Trade Commissioners here for Canada and now we have a Canadian Chamber of Commerce started. Are they enough to help exports? The Chamber of Commerce is in its infancy and wants all the encouragement one can give it in money and enquiries, and, on the other hand, the Trade Commissioners are doing their little "bit," in their own way. But what is really wanted is a periodical visit from the pulp and paper men, or their fully accredited representatives, to visit the market, find out for themselves the good and bad points—and the loopholes—and return home with the intention of competing for some of the trade. The editor of an important Canadian paper told me the other day that he often surprised officials when he mentioned trade chances and Canadian firms often turned down orders because they were more interested in their own domestic market. But the latter remark does not apply to all firms. I know some Canadian firms who enjoy a good export trade to-day, because they used discretion in selecting their British Agents and Importers, and encouraged them in catering for the markets full of competition as it is. Again, the old policy: "Oh! My market is across the border, because it saves trouble and worry," wants confiscation, if industry is to be developed and British capital encouraged, and I hope renewed efforts will be made in 1922 to give the English and Scottish markets, as well as the Welsh, the attention they deserve.

An Encouraging Sign.

The other day the Canadian Trade Commissioners for Scotland (Major G. B. Johnson) was in Aberdeen and he referred to the imports being received from Canada. Regarding groundwood, he said he noticed with satisfaction that a vessel had just arrived at the port from the Dominion with a large cargo of a material which British paper makers used to bring wholly from Norway and Sweden.

With the large amount of straw in Canada there is also room for the development of strawboard supplies. Here are the strawboard shipments to the United Kingdom during October last, the latest figures:—

Strawboard: from the Netherlands, 11,765 tons, valued at £109,115; Belgium, 48 tons, at £692; Sweden, 11 tons at £477;; Canada, 68 cwts, at £76; Germany, 12 tons at £89; U.S.A., 19 cwts. at £30. Here we have a market in one month taking close on 11,900 tons of strawboard and only 3 tons odd comes from Canada.

Cardboard, Pasteboard: from Germany, 76 tons, valued at £2,635; Canada, 39½ tons at £1,605; U.S.A. 21 cwts. at £111; France 11¾ tons at £1,197; Switzerland, 21 cwts. at £145; Netherlands, 8¾ tons at £359; Sweden, 258¾ tons at £14,282; Finland, 11¾ tons at £213; Belgium 14 cwts at £46; Norway, 41 cwts. at £55. The values are what appear on the Customs sheets. The total imports reach just on 405 tons in the month for October.

Canada, however, has a nice connection with the British market in millboards, though the recent shipments have not been as large as usual. The October imports were: From Canada, 384 tons, 1 cwt., valued at £13,026; Norway, 26 tons at £607; Belgium, 18 tons at £212; U.S.A. 126 tons, 6 cwts., at £5,526; Germany, 262¼ tons at £3,155; Netherlands, 18¾ tons at £410; Finland, 262 tons, 6 cwts., at £4,752; Sweden, 386 tons, 6 cwts at £10,710; Switzerland 18 cwts. at £23. These make roughly a tonnage of 1,613 tons, 11 cwts. of millboard for the month, so that in groundwood and millboards Canadians enjoy a good share of the British trade.

Outlook In The Paper Industry.

Everybody is hoping that the new year will open up some sort of a revival in the paper industry. But the outlook, as things stand at present is none too rosy. The political situation is calm; but the financial position at home and abroad will have to be more stabilized. Then rumors are floating about concerning a general election here and the German Reparations question is again to the fore. He would be a wise man who could survey the near prospects of trade in such a time of turmoil. The only ray of sunshine is the fillip Australia has given to the British papermakers in their new tariff.

In England to-day many paper mills are closed, some are working short-time, and some are working alternate weeks. There are about 7,000 out-of-work mill hands, and the strain, not to speak of the eagerness to obtain trade, on paper manufacturers and pulp men is very great just at the moment.

What German Paper Can Do.

When talk commenced here of giving a moratorium to Germany on the £25,000,000 due in January, in order to steady up the money markets and promote trade, there was a hue and cry in London. Before the war, the normal rate was 20½ marks to the £1; to-day it is 895 marks to the £1 and on Nov. 26th was 1,170 to the £1. To excuse Germany one payment would be a blunder it is contended, because the wiley Teuton is subsidising his industries to the detriment of reparations. Hence the cheap paper and boards in the United Kingdom. Germany is now flooded with paper money. The London "People," hit this side of the juggling question off to a nicety the other day in an improvised talk between two German statesmen in Berlin, who declare that they should not defray the cost of the war, but attempt to evade it.

Heinrich (dubiously): The Allies may of fools be the stupidest, but how can we expect that they wil still believe what we say?

Fritz (emigmatically): We have many paper mills—and printing presses—so to-day the value of the mark has to .01 dropped.

Heinrich: Ach! Mein Friendt!

(Scene: The Same—two months later).

Fritz: We some very good news have; those sheeps'-head Allies have one billion of our paper marks bought and the value of the marke has this morning to .001 fallen!.

Heinrich: Then we at one Pfenning a bushel have buyers become, so the Allies to us can sell—or they may go to the devil and take our paper themselves to burn.

Fritz: (cynically): We must hope that they will the pride of generosity feel, now that they have the whole cost of the war paid.

Moral—"Scraps of Paper" do not always represent their face value. German pulp and paper mills pay 15 p.c. dividend down to 7 p.c. and raise capital up to 6,000,000 marks from 2,000,000. Everybody flourishing. Across in England—mills closed, short-time working, over 7,000 paper hands idle. We leave one war settled abroad; we come home to fight another war for our bread and butter—not to mention taxation.

Mr. F. E. R. Becker.

Our good friend Mr. F. E. R. Becker, the pioneer of Canadian wood pulp into the British market, will shortly celebrate his 50th birthday. He certainly does not look a half century old, particularly when he gets his favorite "Carona" cigar going nicely. But his youthfulness must evidently be attributable to the easy time he enjoys in getting rid of the Canadian and Nova Scotian pulps he handles so nicely. Canada owes a lot to him and his energies. I remember once hearing Mr. Frank Lloyd—one of the best trusted paper and pulp producers—say of Mr. Becker, that he was the friendliest and most kindly of pulp men. This was demonstrated some years ago when the mishap occurred at Chicoutimi, through fire in the city. Mr. Becker's first consideration was for the workers and he appealed for funds to help them. "Thank God," he said, "the fire is at a time when they can live in the woods." By the way, Mr. Becker is now close on 33 or 34 years in the wood pulp trade and industry. I understand his friends are going to entertain him to a luncheon in London to celebrate his "Half Century—and not out yet."

Groundwood Values Hardening.

There is a good supply of groundwood in the British market just now and pulp men are beginning to realize what their position is, under the law of supply and demand. Prices are hardening and some business is being transacted. With sulphite and soda pulp trade is not brisk. During the last few weeks some orders of a fair size have been booked. Unfortunately the dullness in the paper industry is stopping the flow of business—what little there is.

Prices are about as follows now: Groundwood (wet) £5½ a ton for spot delivery; Groundwood (dry) £11; sulphite (No. 1) £20; Easy Bleaching, £14½; Sulphite newsprint quality £12; unbleached soda No. 1 £11, soda kraft, £11.

The Film Speaks.

We are getting into the film age in England. A great many of the paper mills—as mentioned by me sometime—are giving demonstrations, by means of films, showing how their special papers are produced. In other words, it is advertising by means of the film. The audience generally consists of printers, publishers and other buyers and all sorts of questions are put to the mills'' lecturers. Most of the big firms have lecturers and film men just now appearing in the various large cities.

Canada and Belgium.

German pulp is now being very well taxed on its entry into Belgium. The market should, therefore, be closely watched. According to the Belgian records 1,618 kilos of pulp was received from Canada in 1920 and during the first six months of 1921 the figures are 1,618,388 kilos of pulp was received from Canada in 1920 fallen away very considerably, but it may be taken for granted that Canada stands a better chance in the market of Belgians nowadays than any German producers, who during the first six months of the present year sent over the border only 654,991 kilos.

IT PAYS TO GROW PULPWOOD.

"It will not be difficult to demonstrate to the paper manufacturer that he can afford to grow trees for pulpwood, when he is paying $30 per cord for peeled wood," said Dr. Hugh P. Baker, Secretary of the American Paper & Pulp Association, before the Yale Forest Club at New Haven, Tuesday night, December 13.

"It is my belief that we are passing out of the sentimental stage in forestry, and that in the next five years we are going to see the beginning of a real economic development in forestry. That is, the beginning of a real economic development in forestry. That is, the time has come when it is going to pay in dollars and cents to grow trees. In another year, as business becomes better, and our industries come back to reasonable production, we are going to come again to the condition which faced us a year ago, that wood for our industries will cost us more than it costs to grow it. When we can demonstrate to the paper manufacturer, for instance, that he can afford to grow pulpwood, we are going to see the same sensible turning to forestry that we have seen in the turn to better banking methods and better methods of manufacture."

If you have some rotten cigars given you, don't throw them away. They will do to break your boy of the smoking habit.

Technical Section

REVIEW OF RECENT LITERATURE.

B-5. Lumber Register. Can. patent No. 192,143, JOSEPH W. HALEY and CHARLES B. YELTON, co-inventors, both of Erlanger, Ky., U.S.A., Aug. 19, 1919. Claims allowed 60.—A. P.-C.

B-5. Logging Hook...Can. papent No. 192,512, WALTER BASTORD, Mission City, B.C., Canada, Sept. 9, 1919. Claims allowed 2.—A. P.-C.

B-5. Logging Hook. Can. patent No. 192,876, OMAR R. SHULL, Vancouver, B.C., Can., Sept. 23, 1919. Claims allowed 5.—A. P.-C.

C-6. Sawing Machine. Can. patent No. 192,879, HENRY STEWART, Ottawa, Ont., Can., Sept. 23, 1919. Claims allowed 4.—A. P.-C.

C-6. Wood Saw. Can. patent No. 192,875, W. SHEPHERDSON, Dymond, Ont., Canada, Sept. 23, 1919. Claim allowed 1.—A. P.-C.

C-6. Circular Saw Mechanism. Can. patent No. 191,-332, JOHN HAKANSON and ALBERT WEBER, co-inventors, both of Seattle, Wash., U.S.A., July 8, 1919. —Claims allowed 2.—A. P.-C.

C-6. Lumber Rule. Can. patent No. 192,515, SAMUEL P. BOPST, Washington, D.C., U.S.A., Sept. 9, 1919. Claims allowed 1.—A. P.-C.

C-7. Barking Machine. Can. patent No. 191,635, CARL MALCOLM JOHNSON, Caribou, and HERBERT LESLIE CROUSE, Crouseville, co-inventors, both in Maine, U.S.A., July 22, 1919. Claims allowed 12.—A. P.-C.

D-4. Lefebvre Groundwood Process. Can. patent No. 192,176, ALBERT H. LEFEBVRE, Watertown, N.Y., U.S.A., Aug. 19, 1919. Claims allowed 5. Same as U.S.A. patent No. 1,277,737.—A. P. C.

E-2; F-2. Concentration of Waste Pulp Liquors. Can. patent No. 192,187, ERIK OMAN, Stockholm, Sweden, Aug. 19, 1919. Sulphite or sulphate waste liquors are cooled, with stirring, to a temperature below the freezing point, and the snow and ice crystals are withdrawn and used for the preparation of fresh liquor. Claims allowed 5.—A. P.-C.

E 2. Decomposition of Sulphite Waste Liquors. Can. patent No. 190,864, And H. Kiaer and Company, Ltd., Clemminge near Fredricksstad, Norway, assignee of Robert Wilhelm Strehlenert, Goteborg, Sweden, June 10, 1919. The sulphite waste liquor is previously concentrated and then heated under high pressure to convert the free and combined sulphurous acid into sulphuric acid. Claims allowed 10.—A. P. C.

E-2. Method of Utilising Sulphite Waste Liquors. Can. patent No. 191,13[illegible], ROBERT WILLIAM STREHLENERT, Goteborg, Sweden, July 8, 1919. Sulphite waste liquor is subjected to the action of SO_2 at a temperature of about 190° to 200° Cent. and a pressure of 20 atmospheres. Part of the sulphurous acid is decomposed forming sulphur and sulphuric acid, and the latter decomposes the waste liquor precipitating out the organic constituents and calcium sulphate. The gas containing the remainder of the SO_2 and sulphur is then drawn off and the sulphur is oxidized to SO_2 again. Claims allowed 13.—A. P. C.

E-4. Method and Apparatus for Burning Sulphur. Can. patent No. 190,870, The Pratt Engineering and Machine Company, assignee of George F. Hurt, both of Atlanta, Ga., U.S.A., June 10, 1919. A body of melted sulphur is maintained within the burning chamber, and a spraying or scattering movement of the burning material is produced in the presence of a suitable oxygen supply. Claims allowed 47.—A. P.-C.

G-6; K-11. Paper Pulp Screen. Can. patent No. 191,-601, The Sherbrooke Machinery Company, Ltd., Sherbrooke, Quebec, Canada, assignee of Anton J. Haug, Nashua, N. H., U.S.A., July 15, 1919. Claims allowed 41.—A. P.-C.

G-7. Process of Refining Sulphite Wood Pulp. Can. patent No. 191,608, The West Virginia Pulp and Paper Company, assignee of Viggo Drewsen, both of New York, N.Y., U.S.A., July 15, 1919. Claims allowed 6. Same as U.S. patent No. 1,283,114. See **Pulp and Paper,** xix (Feb. 24, 1921).—A. P.-C.

G-7. Process of Refining Soda or Sulphate Woodpulp. Can. patent No. 191,609, The West Virginia Pulp and Paper Company, assignee of Viggo Drewsen, both of New York, N.Y., U.S.A., July 15, 1919. The process of refining pine, spruce, or generally similar soda or sulphate woodpulp to render it suitable for the manufacture of nitro-cellulose or the like, which comprises partially bleaching such ordinary unbleached pulp with chlorine water containing 5 percent of chlorine (on the dry weight of the pulp) to produce partially bleached yellow pulp, subjecting this to an alkaline refining treatment by boiling under pressure for several hours to dissolve and remove coloring matter and converted products from the pulp and subjecting the resulting pulp to a supplemental weak bleaching process to decolorize the pulp and at the same time to keep down the amount of matter soluble in caustic potash below 7 percent. Claims allowed 7.—A. P.-C.

G-9. Means for Removing Water from Pulp. Can. patent No. 192,463, AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTAD, assignee of R. E. Wagner, both of Karlstad, Sweden, Sept. 2, 1919. The sheet of pulp is subjected to the action of a series of heated rolls, and press rolls, in such a manner that the portion of the heating surface o fthe heated roll acting on the sheet before each pressing is increased in the direction of movement of the sheet. Claims allowed 3.—A. P.-C.

G-10. Pressed Roll for Woodpulp. Can. patent No. 192,890, AKTIEBOLAGET KARLSTADS MEKANISKA VERSTAD, assignee of Rudolf E. Wagner, both of Karlstad, Sweden, Sept. 23, 1919. Claims allowed 4.—A. P.-C.

G-11. Pulp Separation from Acid Liquors. Can. patent No. 190,881, JUDSON A. DECEW, Montreal, Que., Canada, assignee of William Hoskins, Chicago, Ill., U.S.A., June 10, 1919. The method of separating from an acid liquor paper pulp suspended therein which consists in bringing the liquor into contact with an immersed carbonate which is attacked by the acid liberating carbon dioxide, which rises through the liquor carrying the suspended pulp with it to the surface, where it forms a scum which is removed. The method of separating pulp from sulphite waste waters, which consists in passing the latter over immersed limestone, and removing the resultant pulp bearing surface stratum. Claims allowed 4.—A. P.-C.

H-4. Electrolytic Chlorine Cell. Can. patent No. 192,228, The Hooker Electro-chemical Company, New York, N.Y., assignee of Clinton P. Townsend, Washington, D.C., both in the U.S.A., Aug. 19, 1919. The pressure in the gas space of the cell is kept equal to or less than that of the atmosphere, and means are disposed below the surface of the electrolyte for collecting the evolved chlorine before it reaches the gas space. Claims allowed 5.—A. P.-C.

H-5. Method of Bleaching Paper Pulp. Can. patent No. 191,376, Jamar E. Hesskanen, Canton, N.C., U.S.A., July 8, 1919. The method of bleaching pulp consisting in causing it to flow continuously through a series of bleaching tank units, each of which embodes a plurality of tanks, an independent circulation being maintained from tank to tank in each unit while a portion of the pulp from each unit is continuously carried over the next unit, the amount of pulp being continuously carried over from unit to unit being equal to the amount of pulp continuously fed to the apparatus. Claims allowed 6.—A. P.-C.

H-5. Method of Bleaching Paper Pulp. Can. patent No. 192,666, ANDERS D. BERGLIND, Gulskogen Norway, Sept. 16, 1919. Claims allowed 3. Same as U.S.A. patent No. 1,329,824.—A. P.-C.

K-6. Manufacture of Pulp and Paper from Garbage. Can. patent No. 192,652, JEAN P. PUTTAERT and HENRY F. J. PUTTAERT, co-inventors, both of San Francisco, Cal., U.S.A., Sept. 16, 1919. The process of manufacturing cardboard and the like from garbage, consisting in first removing deleterious hard substances, crushing and removing a part of the moisture, boiling with an alkali, washing and bleaching and reducing to a fibrous pulp, and finally converting the pulp into sheets. Claims allowed 2.—A. P.-C.

K-8. Production of Black on Vegetable Fibers. Can. patent No. 191,071, EMILE AUGUSTE FOURNEAUX, Manchester, Lancaster, England, June 24, 1919. Claims allowed 5. Same as Fr. patent No. 489,601. See **Pulp and Paper** xvii (June 5, 1919).—A. P.-C.

K-12. Fourdrinier Machine. Can. patent No. 191,336, JOHN E. ALPINE, Green Bay, Wis., U.S.A., July 8, 1919. Claims allowed 12.—A. P. C.

K-12 Suction Box Arrangement for Fourdrinier Machine. Can. patent No. 192,675, ALBERT J. DAVIES, Kenogami, Quebec, Canada, Sept. 16, 1919. The suction box is suspended from a vertically disposed elastic bar, and is given a limited reciprocating movement. Claims allowed 9.—A. P.-C.

K-12 Automatic Device for Carrying Paper from the Driers to the Calenders. Can. patent No. 192,726 CHARLES E. POPE, Springfield, Mass., U.S.A., Sept. 16, 1919. Claims allowed 17.—A. P.-C.

K-14. Method of Regulating the Moisture Content of Hygroscopic Material. Can. patent No. 191,464 The Carrier Engineering Corporation, New York, assignee of Willis H. Carrier, Buffalo, both in N. Y., U.S.A., July 8, 1919. The material is placed in a chamber into which is discharged air, the moisture content of which has been previously regulated so as to obtain the required humidity conditions in the chamber when this air is mixed with the air already in the chamber. Claims allowed 28.—A. P.-C.

K-16. Extensible Wrapping Paper. Can. patent No. 193,012, The Arkell Safety Bag Company, assignee of David T. Abercrombie, both of New York, N.Y, U.S.A., Sept. 30, 1919. Stretchable flexible wrapping paper rendered waterproof consisting of a plurality of layers of paper cemented together by a waterproofing substance, and having crinkles extending in one direction and corrugations or pleats extending at a angle to the crinkles. Claims allowed 7. Same as Fr. patent No 508,293.—A. P.-C.

K-18. Process for the Manufacture of Paper Board. Can. patent No. 192,797, BROR GUSTAVE DAHLBERG, St. Paul, assignee of C. E. Munroe, Forest Glen, both in Minn., U.S.A., Sept. 16, 1919. Claims allowed 8.—A. P.-C.

K-19. Carbon Paper. Can. patent No. 192,167, SAUROKU HATTORI, Tokyo, Japan, Aug. 19, 1919. An improved manifolding sheet comprising paper coated with a composition containing as essential constituents a barium soap blended with an oily material and a coloring matter. Claims allowed 2. Cf. U.S.A. patent No. 1,292,404; **Pulp and Paper,** xviii (Jan. 29, 1920).—A. P.C.

L-4. Method of Constructing a Paper Container. Can. patent No. 191,203, Henry Drysdale, Tottenham, London, England, July 1, 1919. A sheet of paper is wound around a mandrel in layers which are coated inside with an adhesive, with the exception of a short space at the end forming the first layer, so that there is an overlap of paper beyond the mandrel. This overlapping part is progressively pleated into overlapping pleats to form the end of the device, and this pleated surface is then compressed between two surfaces to consolidate it. Claims allowed 9.—A. P.-C.

L-4. Paper Bag Machine. Can. patent No. 191,306, The Lockport Machine Company, Lockport, N.Y., assignee of James Perry, Somerville, Mass., both in the U.S.A., July 1, 1919.—Claims allowed 3.—A. P.-C.

L-4. Paper Container. Can. patent No. 191,325, WILLIAM A. McKNIGHT assignee of Walter S. Anderson, both of Chicago, Ill., U.S.A., July 1, 1919. Claims allowed 12.—A. P.-C.

L-4 Paper Containers for Nesting. Can. patent No. 191,47[illegible] Kilgour Brothers, Toronto, Ontario, Canada, assignee of Henry R. Hoyl, Philadelphia, Pa., U.S.A., July 8, 1919. Claims allowed 2.—A. P.-C.

L-4 Compartment Envelope. Can. patent No. 191,660, JAMES A. DELAGHTER, Bonita, La., U.S.A., July 22, 1919. Claims allowed 1.—A. P.-C.

L-4 Handle for Paper Boxes. Can. patent No. 191,666, CARL J. FREESE, Elyria, Ohio, U.S.A., July 22, 1919. Claims allowed 4.—A. P.-C.

L-4. Paper Can. Can. patent No. 191,720, The American Can Company, New York, N.Y., assignee of Frederick P. Wood, East Orange, N. J., both in the U.S.A., July 22, 1919. Claims allowed 3.—A. P.-C.

L-4 Paper Receptacle. Can. patent No. 192,150, EDWARD L. BAILEY, Morrisville, Pa., U.S.A., Aug. 19, 1919. A receptacle formed of a single sheet of paper and comprising a spirally pleated top, a spirally pleated neck, and a spirally pleated body. Claims allowed 5.—A. P.-C.

L-4. Envelope. Can. patent No. 192,949, FRANK A. GODLEY, Palmyra, New Jersey, U.S.A., Sept. 30, 1919. Claims allowed 2.—A. P.-C.

L-7 Paper Spinning Machine. Can. patent No. 191,548, GEORGE SEATON MILDE, London, E.C. 4, England, July 15, 1919. Claims allowed 10.—A. P.-C.

PULP AND PAPER NEWS

Mr. Murray Crawford, a prominent lumberman of Halton county, died at Campbellvile, Ont., on the 10th instant. He was born in Halton county sixty two years ago, and had lived in the district all his life. Forty years ago, Mr. Crawford entered the lumber business, and recently, when his business was incorporated under the name of Murray Crawford, Ltd., he became its president.

At the annual meeting of the Dryden Paper Company Ltd., held in Montreal last Friday, a deficit from operations was shown for the year to date of $321,700, after deducting a sum of $166,000 to take care of any shrinkage in the value of inventory. The balance sheet for the year ended the 30th September last showed total active assets of $1,508,552, and current liabilities, which consist only of acounts payable, of $48,907, leaving a working capital og $1,459,645. Shareholders present at the meeting made a number of enquiries in regard to the business of the past, and the prospects for the coming year. In reply to these, it was explained that the company was mainly interested in the manufacture of kraft, the market for which had dropped considerably—even worse, in fact, than that for newsprint. It was hoped, however, that the coming year would witness an improvement. The directors were reelected without change.

Specialty Bags, Ltd., with headquarters in Toronto and a capital stock of $5,000,000, was recently granted a Provincial charter, empowering the concern to manufacture, sell and deal in paper, cardboard, strawboard, cartons, boxes, bags and so forth. In trade circles it is understood that the concern will take over the Speciality Paper Bag Company, of Toronto. As business in its line has shown a good deal of activity, it is considered that the prospects ahead of the new organization are bright.

The unemployment situation in the North Bay district is reported as being serious.

The printers' strike in Toronto has greatly delayed the completion of work on the History of Canada for use in the public schools of Ontario. The first copies of this book are now in the hands of the Department of Education and are ready for distribution. The book is a companion volume to the History of England, which appeared last September. Both books are from the pen of Professor Wrong, of Toronto University, and are written in a clear, vivid style. The History of Canada supplies a long-felt want in the public schools. It includes an account of the principal events in this country during the administrations of Sir John A. Macdonald, Sir Wilfrid Laurier and Sir Robert Borden, and of Canada's part in the great war. It will be ready for distribution at the opening of the next school term in January.

Speaking of the printers' strike, one is reminded that this has now lasted seven months. No settlement, as yet, appears in sight. The strikers claim that they are in a financial position to continue the payment of strike pay indefinitely, and, from the accounts of its financing which have been made public, this claim appears to be pretty well justified. On the other hand, in conversation with an employing printer this week, it was explained to the writer that the passage of time must render it easier for the employers to fill up the strikers' places. If one is to credit much of what one hears in this regard, it is possible for a person of good intelligence to be trained as a printer a good deal more quickly than many of us had imagined. It appears, moreover, that the publicity which has been given to the printing business by reason of the strike has had the effect of convincing a number of persons of good education, both male and female, that the work of the printer, both as regards its conditions and its remuneration, compares not unfavorably with many other callings open to them.

A new company, with a capital stock of $40,000 has been formed by Messrs, W. H. Farrell, W. S. Farrell and L. E. Westman, of Toronto, to handle wood products, including particularly pulpwood, pulpboard, cardboard and paper. The company is to carry on business as lumber merchants, pulp mill operators, etc.

The unusually large size of some of the editions recently published by Toronto papers has attracted some attention lately. This has been due to the large amount of advertising which has been carried this month.

The news that he has been seriously ill will cause regret among friends of Mr. G. Meerbergen of the Belgian Industrial Co. Fortunately, he is now on the road to recovery and will be able to join his family in Belgium early in the New Year.

A college library wants a copy of the Pulp and Paper Magazine for Feb. 10, 1921, who will help them out?

Through an error in our composing room which can be easily understood by comparing the advertisement of the Engineering and Machine Works in the Pulp and Paper Magazine for Dec. 8 and 15, a Waterous cut was used by mistake. This is a good time to laugh.

Mr. T. P. Howard, controller of the Howard Smith Paper Mills, Limited, Montreal is, we are glad to learn, once more in business, after his recent illness.

Mr. G. F. Steele, Montreal, last week paid a visit to New York on business.

It is pleasant to report that Mr. J. A. Bothwell is better.

LADDERS.

If you use ladders, follow these precautions:

Look for split or broken rungs and stringers;

Look for nails and sharp projections.

Avoid haste in going up or down ladders.

Never leave tools or materials on ladders.

Test your ground support, secure ladder carefully, or have someone hold it.

Step-ladders should be properly tied to prevent spreading.

Look behind stationary ladders for pipe or other projections.

When using extension ladders exercise care in raising or lowering extension.

Report defective ladders, do not use them.

Pacific Gas and Electric Company.

UNITED·STATES NOTES

In the annual report of the Government Printing Office filed last week with Congress, Public Printer Carter uses a comprehensive illustration to give an idea of the amount of paper used by his bureau during the year. He says that if all the paper consumed in government printing jobs during the twelve months covered by the report was laid flat at a thickness of one sheet it would cover approximately thirty-five square miles, and if made into octavo books, piled one on the other, the volumes would soar 500 miles into the air. No fewer than 50,000,000 pounds of paper were used during the fiscal year endeed last June 30.

William M. Plant, Robert S. Theis, and George W. Gould, all three well known to the paper trade in the West, have organized a company to deal in mill shipments of book, coated, offset, light weight catalog, bonds, covers, cardboards, newsprint, kraft, manilla, wrapping and other lines of paper. The concern will be known as the Plant, Theis & Gould Paper Company. It will have its headquarters at 30 North La Salle Street, Chicago.

The possibilities in Alaska are touched upon also in the annual report of Henry C. Wallace, Secretary of Agriculture. Mr. Wallace points out that the Tongass National Forest in Alaska has a stand of not less than 70,000,000,000 feet of timber within its area of about 15,000,000 acres. The Forest Service, after a careful study of these resources and a scientific determination of the value of such Alaskan timbers for purposes of paper manufacture, has divided the forest into 14 development regions, each one of which contains sufficient water power potentialities and sufficient timber to run a large paper manufacturing plant permanently. It is estimated, says the report, that, under the plans now worked out, the two national forests in Alaska can furnish perpetually 2,000,000 cords of pulpwood annually. Two large sales have already been made and one small mills erected. It is confidently anticipated that extensive development along these lines will take place as soon as financial and industrial conditions become normal.

The Robert Gair Company, manufacturers of cartons and containers of all descriptions, is putting out a new issue of $4,000,000,000 7 per cent mortgage gold bonds, dated January 1, 1922, and due January 1, 1937. The proceeds of the issue are to be used to retire certain floating indebtedness and to provide now working capital. Incidentally, there will also be retired $230,000 first 6s of the Thames River Specialties Company, a subsidiary. With the new working capital provided by the bond issue the company will be in a position to take full advantage of any improvement in the industry. Within the past two years the company has acquired several pulp and paper plants, including the Haverhill Boxboard Company, the Thames River Specialties Company, the Straw Mill at Quincy, Ill., and the Chicago Coated Board Company. The companies inventories now amount to about $2,500,000 and the working capital required for carrying on the process of manufacture is large.

Shippers of Brooklyn, which is a large manufacturing and warehouse centre, are discarding the use of wooden containers and are substituting fibre cartons, saving approximately fifty per cent on their boxing costs. The fibre cartons are now used in the shipment of perfumery, soap, soap powders, tobacco, cigars, drygoods and notions, and they have come into general use also in the shipment of hardware, including cooking utensils, nickel, aluminum and steelware. They are proving of use as well in the packing of food products, such as cereals, green and dried fruits, canned goods, and in many pharmaceutical preparations. Before the war the fibre container for as large and weighty packages as 60 pounds of soap was regarded as an experiment, and the industry of making them and the practice of using them were in their infancy. The fibre containers, the basic material of which consists of straw, rags and other wood fibre, cost, before the war 25 per cent less than wood; during the war period the differential went up to 100 per cent in favor of the fibre container; it has since dropped back to 50 per cent. At first there was considerable trouble experienced with the freight handlers who were accustomed to handle all larger packages with their hooks, and complaints came from consignees that the packages were punctured and their contents damaged. This method of handling the packages has now ceased and the new containers have become so popular with the freight handlers, the transportation companies and the manufacturers that they are largely displacing wood for standardized containers. Another point in favor of the new style container is that they do away with the waste involved in the use of wooden cases. The latter are used but once, after which they go to the firewood pile. The cartons are ground up in the mills and are used in making new cartons.

Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, appeared before the Rivers and Harbors Committee in Congress last week and stated the position of the paper manufacturers on the matter of bills now pending for the prevention of water and stream pollution. While admitting that there may be certain cases needing immediate attention through remedial legislation, notably where there are factories—not necessarily paper plants—which pollute streams with acid wastes, Dr. Baker asked the committee to consider whether the legislation called for is of such immediate necessity as to demand the very great expense that will devolve upon plants required to provide filters and other artificial means of purifying waste water before it is returned to the streams. "The effect of the proposed legislation upon the paper industry," said Dr. Baker, "assuming that any one of the bills under discussion becomes a law or amends the existing laws, and assuming that such a law would be enforced to the letter, would be to cause many paper mills in the United States to close down immediately." He pointed out that the burden of installing purification apparatus in cases where great volumes of water are used would be an enormous one, and that this in addition to other huge burdens now borne by the mills would compel no few of them to suspend operations.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 17th Dec.—As the end of the year approaches, it becomes evident that while, speaking by and large, the paper demand continues of fair volume, it has not expanded to the extent that there seemed good ground for anticipating when the revival of some three months or so ago first set in. Expectations in this respect have not been fully justified by events. Nor is a main reason for this far to seek. As has been often emphasized in these columns, the paper industry is one unit in the industrial fabric of Canada. The sort of revival that is needed in this industry is the revival that is bound to come as part and parcel of a general trade revival. And, whatever may be said in quarters where the wish is father to the thought, a general trade revival of substantial dimensions is not yet under way. In the view of many good judges of industrial conditions, it is coming, and is, perhaps, coming soon. But it has not yet set in. There is, in fact, just now, rather a curious—and not a wholly reassuring—resemblance between the judgment that is now being expressed with regard to the industrial outlook, and that which was expressed with regard to this outlook twelve months ago. Then it was said that, with the advent of spring, the country would enter on a period of industrial activity. Well spring, summer and autumn have come and gone since then. But the period of industrial activity did not materialize. On the contrary, the commerce and industry of the country experienced a time of acute depression. One hopes that history is not about to repeat itself in this respect in the year that lies ahead. Nor is there, on the whole, much ground for fearing that it will. Come what, come may, it is morally certain that, at the very worst, the country will, in the coming year, fare immensely better industrially than it fared in the year that is past. And for this reason, among others: The necessary, but painful process of deflation is now pretty well completed. Trade conditions generally are on a more normal and stable basis, by far. Doubt and uncertainty are giving way —in the main, have already given way—to a determination that confidence, albeit of a somewhat tempered kind, shall be the basis of future commercial and industrial operations.

That last at any rate, is the prevailing sentiment in the paper trade. The industry, as a whole, has had much to be thankful for in that it has passed through a very trying and testing year with less painfulness than most other industries. In particular, has it to be thankful for the enhanced measure of activity which has been accorded its operations during the last quarter of the present year. The sky is not yet entirely clear. But it is clearing. In all branches of the industry, men whose opinions are entitled to weight take the view that, at the worst, the coming year will be a far better one than the last. Some, indeed—and among them men of considerable reputation for prescience—believe that it will be an unusually active year and that abundant prosperity for the industry is only "just around the corner." The corner, it is true, has not yet been turned, whether the business around it turns out to be turned, whether the business around it turn out to be only reasonably good or remarkably prosperous and paying.

PULPWOOD.—The situation as regards pulpwood, shows little change in that reported from time to time in these columns. The business in pulpwood is very dull, the demand being abnormally sluggish owing to the fact that most of the mills are heavily stocked with pulpwood bought at a figure enormously in advance of that at which it can be purchased to-day.

PULP.—The demand for pulp is still far from being satisfactory, though things are different from the state of almost complete quiescence which obtained a few months ago. Some prices at which pulp has been recently purchased are as follows: easy bleaching, \$65; news grade of sulphite, \$60; strong bleached, \$90; and sulphate \$73. These prices are at the mill. No doubt, higher prices are being asked, but such, according to information supplied to the writer by a manufacturer, are prices which recently have been actually paid.

NEWSPRINT.—The recession in the price of newsprint, and the necessity that will arise in all probability, to meet the price, in competition, of 3½ cents a lb., announced by the International Paper Company are very fruitful topics of discussion. The question of how, with manufacturing costs, including labor, on their present level, newsprint can be profitably manufactured at something like that figure, is one of which a great deal will be heard in the near future. Meanwhile, it looks certain that, with the price of newsprint on the toboggan, manufacturers of other lines of paper will find it hard to advance prices as some of them had been hinting at their intention of doing.

BOOK AND WRITING PAPERS.—The undertone in both book and writing papers is distinctly good, but, until the New Year has been ushered in, large orders are not likely to be forthcoming.

WASTE PAPERS.—The market in waste papers, which had recently assumed a far more satisfactory aspect, is now in a very unsettled condition. Stocks are small, and the prices of some lines had been advanced, but the demand from the mills is very limited. Altogether the market is now spasmodic and spotty.

TOILETS AND TISSUES.—The situation in toilets and tissues continues to present encouraging features. Demand, allowing for a certain seasonable slackening, is good, and prices unchanged and apparently firm.

The Situation in Montreal.

Montreal, December 20.—In taking into consideration the immediate future of the pulp and paper industries weight must be given to general trade conditions. Just now a fair amount of business is passing, but everyone is looking forward to the new year in the hope that we shall witness a revival. The paper trade is esentially dependent upon the briskness of business, or conditions in fact which are beyond the control of those engaged in the industry. The newsprint and some other papers is contingent to a large extent, upon advertising. In this connection the writer was informed by the head of a large advertising agency that the prospects for 1922 are exceedingly bright.

Some of the older firms who had been appropriations but, new firms were planning extensive campaigns. He instanced one American Company who had never advertised in Canada, but who had put aside a large sum for 1922. We recall cases of Canadian firms who, during the early days of the collapse in prices, decided that it was the right period either to increase their advertising or to inaugurate a campaign. Some of the long established firms pursued the opposite policy, with the result that a considerable amount of business—especially in branded lines of goods—was switched to the firms who adopted the more enterprising policy.

Business during the week has been fairly good in papers, but the pulp section has been quiet. There appears to be a belief that we shall experience a hardening in values, in line with the cost of production—but that of course depends on many circumstances. To use the Asquithian phrase we must "Wait and See."

PULPWOOD.—Very little business is being transacted. It is reported that peeled wood has been sold in Watertown at $18 per cord. Some of the smaller American mills, which ordinarily do not carry large stocks, are holding off. Rough wood is selling at point of shipment at $6.75 per cord, peeled at $11, and rossed at $13.

PULP.—The market for nearly all grades is dull, and is likely to continue so for at least a month. Advices from Sweden state that there is a great scarcity of mechanical pulp in Europe, and that the prospects favor firmer prices. Many Swedish mills are closed down owing to drought. Conditions are such that Canadian mills should not cut prices under a fear of Scandinavian competition. The following are the Swedish production figures for October—Bleached sulphite 1920, 11,961 tons; 1921, 2,611 tons. Unbleached sulphite, 1920, 61,903 tons; 1921, 25,306 tons. Sulphite, 1920, 15,917 tons; 1921, 10,565 tons. Newsprint, 1920, 89,781 tons, 1921, 11,888 tons.

FINE PAPERS.—Orders are coming in at a satisfactory rate. Jobbers are said to have very little stock on hand, and at the conclusion of their inventories are expected to come more freely into the market.

BOOK PAPERS.—Trade is fairly good—nothing rushing, but large enough to keep the mills employed.

ROOFING PAPERS.—For the moment trade is slow, is in what was described as a transitory stage. A meeting was held last week to consider the situation.

BOARDS.—In this section trade is spotty. The price of chip-board, straw-board and No. 3 pulpboard has been reduced from $55 to $50 per ton.

RAGS AND WASTE PAPER.—Although the supply of white rags is not large, so far it has kept pace with the demand. Prices for waste paper are on the easy side.

NEW YORK MARKETS

New York, Dec. 17.—(Special Correspondence)—Probably the most interesting development in the paper market during the past few days has been a strengthening of prices on kraft wrapping paper. Leading domestic producers have announced an advance of one-half cent per pound in the price of No. 1 kraft wrapping, making the new basis 7.50 cents. The rise was not unexpected, as the wrapping paper market has been quite active for some time, having enjoyed an especially good pre-holiday season this year, and it is reported that wrapping paper mills in a great many instances are sold up for a month or longer.

The fate that prices on No. 1 kraft have been boosted, whereas those on the No. 2 grade are unchanged, is likely to lead to a novel market condition, according to authorities in the jobbing trade. For example, jobbers say that even ordinarily it is somewhat difficult to induce many consumers to buy No. 1 kraft wrapping and pay the half a cent per pound more that usually obtains over the No. 2 grade of the same paper, and it is now believed that with a difference of more than a cent per pound buyers of wrapping papers will turn more generally to the No. 2 grade and refuse to buy No. 1 kraft wrapping. There is no gainsaying that in numerous instances users of wrapping paper can make the No. 2 grade of paper serve their purposes just as well as No. 1, and that they pay the half cent differential for the latter only because they desire to use the best. But with a difference of at least a cent a pound, and in some cases more, it is argued that demand for No. 1 wrapping will most decrease.

The newsprint market continues fairly active. Publishers are freely placing contracts for next year's deliveries, and it is stated on high authority that an encouraging number are contracting for the full year. Transient demand has at the moment slowed down to some extent, which would be expected in view of the approach of the year and the lower pries that become effective January 1. Nevertheless there is a steady demand for spot shipments of print paper. Consumption of nwsprint is running high at present, and publishers frequently find it necessary to augment their supplies by entering the open market. Newsprint production figures of the Newsprint Service Bureau, just iissued, are interesting. They show that in November the daily average production of newsprint was 78.1 per cent of the average daily output during the three months of greatest production in 1920, allowing for new machines recently started. The total production of the 44 companies reporting to the Bureau was 159,855 tons in November, and shipments in the same month were 158,406 tons. Stocks at mills on November 30 amounted to 32,044 tons, or 54 tons more than on October 31 last, and were equivalent to about four days' maximum production. These figures show that consumption of newsprint in November ran right along with production, and that manufacturers have very little stock on hand.

Fine papers continue to move in moderate amounts and at steady prices. Mills are not very busy; that is, in the sense of being rushed with work, but most of them have enough orders to keep them running at a fair rate of capacity. Book papers are comparatively quiet and quotations are easy. Machine finished book is quoted at from 6 cents a pound upward f.o.b. New York, with some inferior grades reported available at a trifle under 6 cents. Tissues are quotably steady and in good demand. Box boards have firmed in price, and some mills are asking $35 a ton and more for plain chip board delivered New York and $0 for news board. Demand for boards is slow, however, and the advance in quotations appears to be merely an effort on the part of manufacturers to improve prices.

GROUND WOOD.—While [illegible] generally state that consuming demand for ground wood has decreased, it is said that enough buying is being done to sustain prices and to give the market a farly

active appearance. A strong feature in ground wood appears to be that mill stocks are down to a low level, which enables producers to be more or less independent in their attitude and to insist on firm prices. Around $32 a ton f.o.b. grinding plant is the most commonly named price on domestic mechanical pulp. Canadian grinders are reported quoting down to $26 per ton, but it is said that the extra freight brings the cost of Canadian ground wood to consumers in which is between $38 and $40 per ton delivered.
this country up to the same point as domestic pulp,

CHEMICAL PULP Current business in chemical wood pulp is rather spasmodic in character and of limited tonnage. Paper and board manufacturers are obviously buying carefully at just this season, when they are busy compiling inventories, and therefore trying to keep stocks of raw material down. Prices on pulps hold firm, however, and there is little or no selling pressure of moment. Bleached sulphite and kraft pulp are mostly favored in the demand, and these pulps are selling at least reported prifces. Soda pulp, bleached, at between 4 and 4.25 cents per pound, and news grade sulphite at from 2.50 cents upward at pulp mills, also are meeting with fair demand.

RAGS There is little doing in papermaking rags. Mills are mostly out of the market as buyers, and dealers seem to be simply biding their time in the belief that demand will revive after the turn of the year. Of course, there are some packers who are anxious to move rags, and buyers who shop around the trade are managing to get some lots of rags at cheap prices. Values in general tend downward. Sales of satinets to felt mills are reported at as low as 85 cents per hundred pounds f.o.b. New York for No. 1 packing and 75 cents for No. 2 packing. Old thirds and blues are offered to mills at 1.75 cents and less for repacked stock and 1.25 cetns for rough packing at shipping points. Old whites are quiet and irregular in price, and new cuttings are quoted at wide ranges.

PAPER—The old-paper market has developed no important changes this week. The better grades are holding fairly steady in price, partly because there is a moderate movement of them into consuming channels and partly because packers are firm for the quotations named, and low grades rule at about last reported price levels mainly because there is little or no room for further recession. No. 1 hard white shavings are quoted at around 3.75 cents a pound f.o.b. New York, No. 1 soft white shavings at 3 cents, old books and magazines at 1.20 to 1.25 cents, old No. 1 kraft paper at 1.60 cents, white news cuttings at 1.70 cents, ledger stock at 1.65 cents, folded newspapers at 50 cents a hundred pounds, and No. 1 mixed papers at 35 to 40 cents.

OLD ROPE AND STRINGS—Old manila rope continues in steady demand from paper mills and prices are unaltered. Between 4.75 and 5 cents per pound at dealers' shipping points is the prevailing value of old rope, and sellers assert that they are receiving the higher figure on most shipments. Old bagging is in a market condition bordering onto dormancy and prices are nominal. Offerings of No. 1 scrap bagging to paper mills at 90 cents a hundred pounds, of gunny bagging at 1.10 cents a pound, and of roofing bagging at 60 cents a hundred pounds seldom result in sales, as consumers show little desire to buy.

REPORT ON THE USE OF POWDERED COAL.

The fuel problem in Central Canada has, through the fuel shortage experienced during several recent winters, been much in the public mind. At the last session of the Dominion Parliament a Special Committee of the House spent much time in hearing and accumulating evidence respecting the future fuel supply of Canada, and, as a result, a series of recommendations were laid before Parliament. These included the recommendation that the public be informed as to the best methods of using the various fuels for both domestic and industrial purposes in order to obtain the greatest possible efficiency and increase the demand for our natural products. The Government, through the Department of Mines and the Lignite Utilization Board, has already undertaken a comprehensive series of investigations having these objects in view.

Amongst the developments which may contribute to making Canada more independent in the matter of fuel supply are the carbonizing and briquetting of our low grade lignites. Another development that deserves the careful consideration of all large industrial consumers of fuel is the use of pulverized coal. A recent contribution to the available literature on this subject is a report just published by the Mines Branch of the Department of Mines, Ottawa, entitled, "**The Preparation, Transportation and Combustion of Powdered Coal,**" by John Blizard, which has been prepared with a view to showing that low grade Canadian fuels might be more widely utilized by burning them in powdered form.

Pulverized coal has been used for some years now in rotary calcining kilns, almost all cement plants being so equipped. It is similarily used, in lime burning, in the calcining of magnesite and in the calcining of siderite iron ore.

There appears to be a wide field, however, for the further development of the use of pulverized fuel in the production of power and heat in large industrial operations.

The author of this Report has given a very comprehensive and detailed description of the various systems used in the preparation, transportation and combustion of powdered coal. In addition, there is a review of many of the industries which are burning coal in the powdered form, with a detailed description of the methods employed in the more important of them, showing the advantages derived by using powdered coal.

Quoting from the introductory of this Report: "Manufacturers, and operators of coal fired furnaces cannot afford to disregard the possible advantages of pulverizing their coal before burning it. Hence the purpose of this bulletin will be fulfilled if it leads them, after making careful estimates, either to abandon their present method of burning coal on grates or stokers, and install the pulverizers, conveying system, powdered coal feeder and burner, best suited for burning powdered coal in their plant; or to reject, as uneconomical, the replacement of their present system of burning coal, by a system for pulverizing and burning it."

Copies of the Report may be obtained on application to the Director, Mines Branch, Department of Mines, Ottawa.

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INQUIRIES SOLICITED:

General view of the plant of Electrochimica Pomilio, Naples, for the mauufacture of Caustic Soda, Chlorine and Pulp by means of Chlorine; described in our last issue.

WHAT CANADA NEEDS MOST

There are too many people in the British Isles. There are vast empty spaces in Canada which, given human occupation and human endeavour, will blossom like the rose. Canada's problem is to establish a connection between the people who have no land and the land that has no people. The action of Hon. F. D. Pattulo in going to England in an effort to obtain settlers for 2,000,000 acres on the British Columbia lines of the Grand Trunk Pacific is the kind of action which will have the most rapid and far-reaching effect on the future of Canada generally, and the prosperity of our nationally owned railroads.

In Great Britain the Canadian National Railways have recently made a wide distribution of a booklet specially prepared for women, pointing out the advantages for the proper kind of women to make their homes in Canada.

NEW STEEL BRIDGE AT EAST ANGUS.

Work on the new steel bridge to be constructed across the St. Francis river at East Angus has been commenced by the contractors, Messrs. G. D. McKinnon and Company of Sherbrooke.

Esparto Papers.

Messrs. James Wrigley & Sons, Ltd., Bridge Hall Mill, Bury, Lancashire, are just completing an extensive addition to their Esparto plant. When finished the plant will be the finest in the United Kingdom and the output of the mill in esparto papers will be trebled. Esparto to-day is £6 10s. a ton for Spanish No. 1 and £3 17s. 6d. for other qualities c.i.f. to U.K. ports.

	1921					1920	1919	1918	1917	1916	1915	1914	1913
	DEC. 1	SEPT. 1	JUNE 1	MAR. 1	JAN. 1	JAN 1	JAN. 1	JAN. 1	JAN. 1	JAN. 1	JAN. 1	JAN. 1	JAN. 1
Wood Pulp	188	169	243	262	327	226	218	206	205	124	101	103	100
Rags	135	115	139	195	227	253	211	140	136	91	93	96	100
Paper Scrap	160	122	131	180	214	271	190	150	166	105	84	95	100
Supplies	185	190	210	225	225	181	178	178	138	118	105	102	100
Chemicals	170	181	196	208	220	223	191	179	188	216	143	90	100
All Mat'rials	171	157	202	230	271	230	207	180	175	122	103	99	100
Labor	204	234	234	276	276	225	197	168	130	111	100	100	100
Material & Labor	178	173	208	240	272	229	205	178	166	120	102	100	100

Index Number for Materials and Labor at Oct. 1, was 169, at Nov. 1 was 172. Upon the commodity exchange basis, our papers are within 8¼% of the 1913 value

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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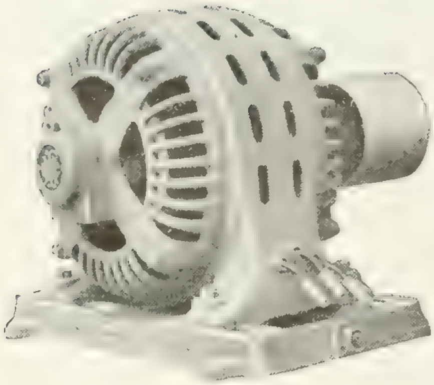

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:-: EDITORIAL :-:

Happy New Year

GETTING IT STRAIGHT.

There was doubtless some surprise among our readers with regard to the editorial comment on the Australian Tariff in the Dec. 15th issue. This consternation however, must have been mild compared to our own when it was pointed out to us that one premise on which the editorial was based was an erroneous interpretation of the statement furnished us of the terms of the Australian tariff on paper. The idea was conveyed to our mind that Australia had established a graduated tariff according to which Great Britain had access free of duty to the paper market in the Island Continent while Canadian mills were handicapped by a duty of £3 per ton and other countries by an additional duty of £3 per ton. We do fully appreciate the fact that the preference given Great Britain is an unjust discrimination which occurred largely, if not entirely, through either hesitation or indifference on the part of the late Government in presenting to the Australian Government, Canada's claims for equal consideration. It has been intimated that Australian has a number of products which are used in Canada and could be used even more extensively than at present and on which the Australian might be willing to consider an exchange of preferential tariff conditions. It is not unlikely that steps taken some time ago may result in an arrangement which will put Canadian paper on a more nearly equal footing as regards that made in other parts of the Empire and place Canada also in a position for more nearly equal competition with countries whose low labor costs, depreciated currencies and cheap freight rates at the present time make profitable business with Australia a matter of considerable speculation.

Australia looks to Canada and must look to Canada as the logical source of supply for newsprint and a continually increasing range of other papers. Canadian mills did the best they possibly could under strenuous circumstances and under conditions which were not at all of their making, to keep Australian customers supplied with paper during the War. A number of them look to that country as their natural market and they can be counted on not only to furnish satisfactory paper but to give the most reliable service.

In view of the cordial relations and the steadily increasing amount of trade between the two countries and in view of the sentiment, so happily expressed recently by Premier Hughes, which must not be entirely neglected, there is certainly a strong argument in favor of putting Canadian paper on the same basis as that from Great Britain. A preferential tariff on Canadian paper is really an insurance of the supply to Australian consumers.

Explanations usually make matters worse, but it is only fair to the Canadian Pulp and Paper Industry that readers of the Pulp and Paper Magazine should not get a wrong impression of our reference to manufacturing conditions here.

A CANADIAN VIEW OF THE CASE.

A letter received last week by the Editor contains some information which would have been very welcome and helpful had it come a week or so sooner. Our comment in the issue of December 15th, gave our conception of what was most likely the intention in Australia in framing the tariff with regard to paper. Some of the comparisons as to the rate of duty were based on the mistaken premise, that British newsprint was free, Canadian charged with a duty of £3, and that from other countries another £3. Our correspondent enlightens us on this point:

"The Tariff law now operative in Australia places our mills at a disadvantage of £3 sterling a ton on newsprint and of 10 per cent ad valorem on other grades of paper as compared with Great Britain. (You are mistaken in supposing that a $15 a ton differential exists in the tariff as applied to Canadian. Japanese and Scandinavian paper is admitted to Australia on exactly the same terms as Canadian, as are also papers from Germany and other central European countries.)

"You are also mistaken in thinking that Canada should be able, because of assumed greater efficiency and cheaper raw materials, to undersell the world's paper markets even to the extent of $15 a ton, if need be. It is doubtful, indeed, at the present time if the margin between production costs and selling price on Canadian newsprint amounts to $15 a ton or anything like it.

"Furthermore, the advantages you suggest that Canada possesses are offset to a considerable degree by the cheaper labor in both British and European mills and, at the present time, more than offset so far as Germany, Austria and Finland are concerned by the depreciated currencies of the countries in comparison with that of our own."

The letter further states that manufacturing costs are practically identical in Canada and the United States. No two countries in the world have ideas and ideals so nearly alike and on such a high plane. The standard of living which has been laboriously raised to its present high standard can only be supported by high wages, which, in turn, make for high costs of production. It is unlikely that either country will submit to anything lower than present standards.

There is no international situation exactly comparable to the British Empire, which is an organization of nations for mutual benefit, for promoting world peace and, when necessary, for mutual defense. The force that keeps the Empire together is principally the bond of blood relationship with a common ideal. The head office, so to speak, is at London but business is carried on directly between one branch plant and another. Each branch has shown itself ready and willing to make enormous sacrifice for the good of the organization. In the great emergency of the late war it was not a question of whether one part should do more or less than another; each simply did all that was necessary. Equality in willingness to serve is recognized in political equality but commercial equality is necessary to the permanent success of the organization. This means uniform tariff accommodation with an inclination and agreement to reciprocate for mutual benefit growing out of an increased interchange of the products of each part of the Empire for those of every other part.

In the working out of such a tariff of mutual accommodation, fairness demands that, where the same commodity is imported from several parts of the Empire, the rate of duty must be the same. To concede more to one part than to another is discrimination, but this may be due to the fact that the part discriminated against did not take proper steps toward securing the most favorable terms. This is evidently the case with regard to Canadian paper in Australia, where, by virtue of a tariff law recently enacted by the Parliament of the Commonwealth of Australia an import duty amounting to £3 per ton has been imposed upon newsprint paper entering that country except newsprint paper from the United Kingdom, which is admitted free; and papers other than newsprint, are admitted into Australia upon payment of a duty of 5 per cent ad valorem if from the United Kingdom and of 15 per cent. if from any other country, including Canada.

The effect of this preference accorded to the paper manufacturers of the United Kingdom, but withheld from Canada, will be to exclude Canadian newsprint paper from Australia, since a duty of £3 per ton, added to other disadvantages due to variance in exchange, difference in the standard of wages, working conditions, etc., and less favorable shipping rates, will make it difficult, if not impossible for Canadian paper manufacturers to compete in that market. The discrimination against other Canadian papers, amounting to 10 per cent. ad valorem, will effectually exclude such papers from the Australian market.

That loss of the Australian market under such conditions would not only be detrimental to the Canadian Paper Industry by blocking a natural outlet for a staple product, but this would seriously upset our national trade balance and so inflict an injury on the whole Dominion.

Australia has been growing steadily more dependent on Canada for paper supplies. At the same time, large sums of money together with much personal and pioneering sacrifice has been invested in plants to make paper for this natural market. In the belief that they should accommodate and protect the Australian consumers as permanent customers, Canadian paper mills supplied much paper to them during the last few years on which considerable more profit could have been made in the spot market.

In order to secure the preferential treatment accorded them, the British Papermakers appealed to the loyalty of the Australian Commonwealth on the ground of Empire solidarity, the needs of the returned soldiers, the desirability of keeping Australian money within the Empire, and on "the still higher grounds of patriotism." On none of these grounds is Canada entitled to any less consideration than that accorded any other part of the British Empire.

Any action taken by the Australian Government in excluding Canada from the preference accorded Great Britain, and on these grounds, surely would be discrimination against Canada as a sister dominion within the Empire and is in direct conflict with Australia's attitude at the Imperial Conference held in London this year and which was set forth by the Prime Minister, the Honorable W. M. Hughes, in a statement made before the British Empire League in London on August 22nd., as follows:

"Our safety, our prosperity, our existence, our future,
" depend upon united action, and we solemnly resolved
" that to the outside world we are not many, but one.
" For good or evil we resolved to tread that path, and
" it was a wise resolution.

"We depend upon each other, not only for safety and
" security but for daily bread. The Dominions and the
" people of these islands are bound by many ties, but
" by none more real and lasting than those of buyer
" and customer. The Dominions are the best customers
" England has got, and Great Britain is the best buyer
" in the world of the products of the Dominions."

There is reason to believe that the Australian Government is not unwilling to extend the preferential tariff on paper to Canada provided definite negotiations to that end are undertaken by the Canadian Government and suitable concessions made in return.

With Canadian mills shipping 3,000 tons of newsprint monthly, and other papers yearly to the value of a million and a half dollars, it certainly behooves our Government to get busy. To arrange a reciprocal preferential tariff is not merely to safeguard a market for one of our most important industries, employing thousands of Canadian workmen, but it also would make some materials, necessarily imported, cheaper to the Canadian consumer. Now is the time for the Government to act rigorously.

The Pulp and Paper Mill Engineer As An Organization

By J. A. HEDGCOCK, Asst. Chief Engineer. H. S. TAYLOR Limited, Montreal, Quebec.

The word "organization" is a broad one. It can be applied to a group of individuals numbering into the hundreds of thousands, or to two individuals only, but while two or more may form an organization, and be accepted as such, it does not necessarily follow that they are truly organized. A united effort for a common purpose with each individual in control of his special division of the work, whatever it may be, yet familiar with the work of every other, that his division may be interwoven with each other division as demands are made, is essential, and without it an association of individuals cannot be said to be truly organized.

In any single branch of standard engineering the demands of the engineer specializing in this branch are in general closely related to but one subject, and it is therefore the general custom for one individual to practice his profession and satisfy the demands of his clients. In lines of engineering specializing on the entire detail of a basic industry, however, three or more separate branches of the profession must be in demand, together with a clear knowledge of the operating requirements of each separate process.

For such a demand a quantity of detail is required that is too extended for one individual to have complete possession of at all times. He can be thoroughly familiar with it, but he can much better serve his clients, and also himself, by concentrating his activity on a particular division of the work, the entire detail of which is at his command for immediate use.

With a demand for detail greater than can be given successfully by one man, the demand must become one for more men, until both conditions are satisfied, each individual having special experience and knowledge of his own group of details. With a total requirement of detail spread out among a group of individuals, each individual, while specializing on his own particular group, yet familiar with those of his associates, an organization is complete, and if any demand within the scope of their work is met promptly and successfully, it can be said that they are truly organized.

In the beginning, the pulp and paper industry was represented by a few scattered mills, producing grades of paper very different from those of today. Electricity was little known and as a factor in the industry practically unknown; the mechanical features were crude and in general built up at the mill as their requirements presented themselves, and the development was carried out on the principle that a building was a building, and the equipment fitted to it.

The paper mill engineer was in evidence even before this period, but in these early days he had very little experience upon which to base his work, the details of which were few and of such character that the superintendent of the mill could master them as easily as the engineer, with the result that the superintendent generally built the mill from the drawings of the engineer, if he preferred, or if not, from his own experience. One of the largest paper mill cities, we can say, was founded by the engineer selecting a location where water power would be available and building thereon a number of separate buildings; paper manufacturers followed fitting equipment in these buildings, either with the assistance of the engineer or without it, as
mands, was wanted. Hydraulic experience with train-
they happened to feel toward such assistance.

With a steadily increasing development of the industry, the manufacturers could not be satisfied with these conditions, and with electrical and mechanical improvements at his command, the engineer began opening the door to better mills and more and better paper at less cost. Building the mill with industrial experience only, and by rule of thumb methods became less popular, and the paper mill engineer began to be recognized as necessary and given real responsibility in the work. He soon systematized many of the old methods, building structures to fit the equipment and operating demands, in place of fitting the equipment to the structures. He formed layouts, taking into consideration present and future requirements in as far as the progress of the period allowed him to go, and carried his work through the construction period, superintending the construction of building and installation of equipment, this procedure dispensing with the six foot rule, and other rough forms of measurement as the principal factors in laying out and checking up the work.

The industry continued to grow in number of mills and especially in the size of the individual unit. Locations previously thought inaccessible were selected and developed, answering the call of raw materials and cheap power irrespective of distance, thus greatly extending the engineer's range of activity. Electrical and mechanical development was always one step ahead and the engineer found he was reaching the point where he alone could not keep up with the demands put upon him. Originally he had some three or four processes to design for, now he had four times this number, and the resulting grades of product again increased this number many times; electricity in the mill was far advanced and new and improved types of machinery were everywhere being installed, in many instances special for the different grades of production. The steam turbine began to supersede the reciprocating engine as larger units were demanded and these turbines were of different designs to fit special conditions.

In the larger mills the power developed was largely hydraulic only, and upon the fulfillment of demand for electrification, the hydraulic development gave way to hydro-electric, and this hydro-electric became in many ways special for paper mill operation, requiring knowledge of the industry to install to the best advantage. The preliminary work, including layout, became more complicated due to increased size of units demanded, and to advancement in electrical and steam development, requiring more time, thought and experience in its execution.

Under these conditions it was necessary for the engineer to be proficient in civil, electrical and mechanical engineering, to keep up with their latest developments as they affect the industry, and to keep in close touch with operating methods that were improving in pace with the mill itself.

The demand for more men was at hand, men experienced in the engineering and operating requirements of the industry, but with special training in one or more of these requirements. Electrical experience with training in the electrical demands of the industry, as well as mechanical experience, with training in mechanical de-

[illegible] civil and electrical detail as applied to the industry, could find on opening, and experience in the forming of layouts, embodying present and future requirements as a whole rather than any particular branch was necessary. In addition, structural design as applied to the various structures required by the industry, and with these five divisions represented, any engineering detail that might come up would necessarily come within the scope of one or the other, thus fulfilling the requirement from an engineering standpoint.

While the five divisions as mentioned are the leading factors and in control, they are not in themselves sufficient to carry out the entire detail of a development as demanded by the industry of today.

In any pulp and paper mill work estimating experience is necessary, including a thorough knowledge of the cost of material, labor, equipment and finished work wherever the activity may be carried on. Commercial experience is required, as on any development the detail incident to price, terms, delivery, etc. of equipment and materials must be arranged and definitely settled to the best advantage of the development and the owner. With drafting and clerical experience the office requirement is completed, adding four divisions as a support to the five engineering factors.

To complete the organization three more divisions are required, completing the outside or field requirements. Field work experience with training in the requirements of the preliminary work and experience in supervision of the work under development is needed, also experience in the superintendence of construction of the actual development work is often necessary, these three field divisions together with the nine office divisions, completing the requirements for an engineering organization that can but handle successfully any detail within the scope of its work that is put before it by the industry.

With the foregoing paragraph in mind we see the term engineer change from the description of an individual, to that of an interdependent group, whose combined experience and special training would represent an authority on the engineering work of the industry.

Experience as so far referred to must in any organization be represented by individuals, and the allocation of this experience to the individual must vary in different organizations.

The division of electrical and mechanical experience may be combined in the duties of the Power Engineer, hydro-electric experience under the title of the Hydraulic Engineer. Layout experience would be handled by a representative trained in this special work, and structural experience is necessarily embodied in the Chief Draftsman.

Estimating experience would be the duty of a representative trained in this phase of the work, who would also be in command of conversion and general manufacturing costs throughout the many different processes. Commercial experience would be represented by the Purchasing Agent, and drafting and clerical experience by their respective office staffs. Field work and supervising experience is carried by the Field Engineer, or outside man, and experience of superintendence by the Construction Superintendent, who in addition to this actual construction experience is thoroughly familiar with those requirements, which pertain to pulp and paper mill work. The entire organization is presided over by a chief, whose experience and knowledge of the industry is such that he can forecast the requirements of each particular job and correlate and manipulate the experience under his control, to its demands whether of large or small extent, that the one objective—a satisfied client—is always reached.

No two jobs that this organization is called upon to carry out will be alike. They can, however, be divided into two classes, first—entirely new work, and second — extensions and improvements to present plant, the individual characteristics of each class being similar for one job after another.

In new work the field is clear; the client's organization at the commencement is generally nil, and the essential duty of the engineering organization is first to carry out the preliminary work, complete the development and then to turn it over as an operating plant, all in the shortest possible time.

In the second class, however, an operating plant is in the field that must be kept in operation despite any engineering or construction demand. The work must be designed with the present plant ever in mind. Building design must be similar that appearance be the same. Layout must be orderly and yet include present plant as a part thereof, buildings, piping, wiring, and in many instances, machinery must be designed to unite new and old work, and lastly an operating organization is present from the commencement that will take over the new work upon completion and operate it with the old as a complete plant. This organization will have many requirements that must be embodied in the new work, and they will naturally feel that they should have charge of the general details of construction and installation.

Extension or improvement work, especially if the existing plant be of considerable extent and the new work likewise, calls for a real effort on the part of an engineering organization. An amount of detail is encountered similar to that required for new work, and in addition the details of the old work must interlock with the new, or vice versa. Construction and operation work, opponents of long standing, must be carried out side by side without friction or dispute, shut downs of operation due to any phase of the new work are not allowable even during the tying in period, and yet progress of the new work must be the same as if in the clear, no excuses of hindrance on the part of the existing plant being tolerated.

While this class of work demands organization and real efforts on the part of the engineer, it can be carried out and each condition met successfully. A major essential however, is that the operating organization cooperate fully with the engineering organization, and better results are sure to be forthcoming if the construction and operating forces are kept as two separate organizations, the construction forces being under the control of the engineer and the operating forces under the control of the client.

It is here that the superintendent of construction of the engineering organization may be of real benefit, as he can superintend the new work throughout, reporting first to the client and then to his own chief, and theoretically dealing with the operating department through the client, at the same time receiving his own instructions through the same channels. Thus there can be no friction as there is no direct contact.

The superintendent is familiar with the operation and understands fully its demands; his every move where interference might be caused is made with operation first in mind and construction second, yet, through his knowledge of the dual demand he is able to subordinate his own work to that of the operators and yet keep his work well in advance of an extremely rigid schedule.

In carrying out any development, whether it be new or old, the preliminary and detail work pass through the engineering divisions following a system that has been constructed to avoid the omission of even the slightest detail. General plans follow the layout, and are in turn followed by the detail drawings of the structures and equipment, all engineering work pure and simple.

In the consideration, selection, and details of purchase, of equipment and materials, however, there is a question, especially if the client's executive organization is on the work. The part the engineer may play in the consideration and selection will be brought out in a following article, but the details of purchase, involving price, terms, delivery, and adherence to original specifications might best be considered here, as they have a direct bearing on the organization as a whole.

The engineer through the variety and extent of his work can often obtain a lower price than can the client, and the terms can often be adjusted to be more advantageous to the client, than if he adjust them for himself. The time of delivery often has a direct bearing on the price, higher for earlier delivery and lower for later, and the engineer following a definite schedule in the progress of the work can set the time of delivery accurately, and thus gain for the client, who is often desirous of an early delivery irrespective of progress, a reduction in price by setting the time of delivery in accordance with the date of installation.

There is, of course, no objection whatever on the part of the engineer to the client taking over this entire detail, but in that case the information should be in the engineer's file for reference during the course of the work, and as he is organized to carry it out for the benefit of his own work if for nothing else, the taking over by the client will only add more work and thus more expense, and in general double the work as this entire detail should be relayed to the engineer, as it is essential in the performance of his work. The engineer must be in communication with the manufacturer for drawings and general details of the equipment under order, and must be certain that it is shipped per original specifications, generally issued from his office. For this work commercial experience is included in the organization, and the client can avail himself of it, and thus show a saving for himself and a benefit to the engineer by so doing.

It must be kept in mind that "details of purchase" is the work of the engineer's Purchasing Agent, not actual purchase. Contracts, orders, or any other essential documents are obtained from the manufacturer, checked and if satisfactory relayed to the client with approval shown on the one that, in the engineer's estimation, should be installed, providing, of course, that the client has not specified his own selection. The client is at liberty to accept that which he wishes, providing the preference of the Engineer does not suit him, but in allowing the engineer to carry out this detail the continuity of the work is uninterrupted, and in the end the satisfaction to both the client and the Engineer will be much more pronounced, as to one the detail is available at first hand, and the other is relieved of it but at the same time having absolute control of any transaction.

The grouping of experience in one location is logical and along the right line. Should the manufacturer have some bodily ill and should wish treatment therefor, he does not add a doctor to his organization and keep him there continually, but goes to the office of the specialist and secures the treatment prescribed, and upon the disappearance of the ill, whatever its nature may have been, the services of the specialist are discontinued, and no further expense incurred.

Why should not his mill be treated in the same manner as himself? If it requires improvements, let him go to the engineer and retain his services for as long as required, expense being incurred only during the period of employment, and the employee be dropped the minute his usefulness is past, thus averaging year by year to the client less expense than if continuously supplied with such service.

Such an organization as previously described can carry out its work with far greater thoroughness whether it be new work with a clear field, or additions or improvements in connection with existing plant, if in full cooperation with the client's organization, it being greatly preferred that the association between the engineer and the operator be at all times of the closest on any portion of the work where mutual interest is necessary, since, while the one is bringing the development into being, the other must operate it, thus bringing about a joint situation that cannot be neglected.

THE LOST PAPER.

Oh! pity me, I cannot talk.
So, put me in the files.
Don't leave me lying round about
In bunches or in piles.

You've been looking for me everywhere and the file clerk has gone on oath against your own declaration.

My whereabouts is unknown.

There has been a hurried and fitful flopping about of various piles of correspondence and records.

You need me in a hurry.—Where am I?

Drawers are pulled out and slammed shut. The desk blotter is cleared and lifted and discloses nothing.

You must have me within five minutes—Jones is waiting.

"D...it!" you say, "here's the very spot, I remember perfectly." "Not so," say I, "your memory plays you false. Try your pockets."

Out come papers, forgotten bills, lodge membership cards, all in a muddle. No results.

Only two minutes more.

"Try wifie and ask her to look in your other suit," I suggest.

The telephone is rung and after a couple of wrong numbers, the home partner tells you she can find nothing.

One minute more.

The conference will be waiting.

"Where in h—?"—

A few more things are thrown around and you bury your head in your hands, then get up and walk excitedly up and down, back and forth, calling upon memory—blank despair!

Time is up—'Tis three o'clock.

Across the room you walk and then your eye blazes. "Here I am on top of the filing cabinet, under Ledger X-Y-Z."

I laugh and chuckle with glee.

You hear it and then—

"Who the devil are you?" you ask.

"Me?—Why I'm the Imp of the Lost Paper", I reply, "and, man alive, be careful next time; I'm only paper, but I'm damned important."—Exchange.

Governor J. J. Blaine of Wisconsin has appointed Franklin A. Lowell of Rhinelander, State Inspector of of pulpwood. The duties of the office call for the supervision of pulpwood and shipment. Mr. Lowell is a newspaper publisher who gave ardent support to Blaine in the recent Wisconsin gubernatorial campaign.

News From Europe

The Tragedy of Paper.

Recent events in the European paper trade clearly show that as an industry its periods of prosperity are strangely uncertain; apparently success and wealth in this instance are too quickly gained to last; like the spendthrift's fortune, the riches of paper do not wear well. Everyone agrees that the depression in the trade cannot be wholly explained by the widespread or universal rise in the costs of production; many are shrewd enough to see that bad management in prosperity is frequently the core of the problem; that the resources of the industry, wood, coal, chemicals, rags, have been taxed and abused to a point that has seriously checked its growth; this in the now well known phrase is the tragedy of paper.

But a tragedy is no less a tragedy because it overtakes us as a consequence of our own faults. Had there been no trade jealousy, had those who controlled the production of raw materials been less greedy to exploit the necessities of an industry starving for lack of wood and fuel, had workmen been less intent upon forcing up their pay and forcing down their hours of labor, there might still be depression in general trade and in the paper industry, but the world would have been spared chaos and tragedy. For the desperate struggle to maintain production in spite of soaring costs of materials and labor has affected every country, and put out fires in industry which have not yet been rekindled; it has gravely injured the business and professional classes; and to the workmen themselves it has brought no small disaster.

This is the spectacle which may be seen now in Europe, and particularly in England and France in the very industry which under better management should be enjoying the greatest prosperity. A very large number of workmen are unemployed through the closing of mills which in all probability will never be reopened. Many mills are on short time, working three or four days a week instead of the normal five and a half. The most fortunate are busy still, it is said busier than ever.

That is the outline; now for some details. Prices of paper are tumbling down, but the costs of materials are nearly as high as ever, and until they come down, the paper trade will be in a bad way.

"In England," according to the well-informed editor from whom the foregoing views are taken, "manufacturers of paper have just become alive to the importance of Technical study and the work of the Technical Section of the Paper Makers Association of Great Britain and Ireland is evidence on this point."

The Economic Utilization of Heat and Power In Paper Mills.

The technical press of Europe is deeply concerned with the problem of heat and power in the mills. No wonder. As Mr. Grewin says in the articles which recently appeared in Svensk Pappers-Tidning, the technique of the production of steam has been studied too conclusively from the point of view of constructing engineers, who have neglected, in their search for power, the problems of steam as a source of heat. The waste of heat through faulty engineering, is the subject of a very large number of practical essays by experts of different European countries. The facts certainly need collecting and elucidating.

Technical Research in Europe.

The German and Scandinavian journals continue to publish articles on technical subjects and the reasons for this generous publicity are well worth a brief notice. The great virtue of the Technical Associations of the Continent is that they have proved the value of a public agenda—a well defined scheme of research collated down to the very latest results of international investigation. From such an agenda nothing is held back in the form of reservations. Trade secrets are excluded. In the course of a highly instructive interview, the writer was informed that this international exchange of technical knowledge had not met with favor in England. English paper makers still cling with jealousy to their "secret processes." "To guard as secret a process or supposed invention, when in plain fact it has been known and studied for years in the light of international research, must seem astonishing in these days; it is astonishing."

To the writer, intent upon estimating the value of the technical literature now available in England, it came as a painful surprise that even the facility of reference, that is of consulting current periodicals in foreign languages, was denied him upon no other pretext than that same jealousy, of which the writer was made acquainted in the interview just quoted. While all other nations are "pooling" their technical knowledge, the British paper maker, with pathetic futility, is locking up the treasures of a library which he does not even use in his own interests.

Waste of Paper.

The reviewers have devoted a good deal of space to E. C. Worden's work on Cellulose Esters. It comprises ten volumes, and, in the opinion of "Nature"—to take one view out of many—it is a curious instance of the expenditure of paper. An examination of the style of this prodigious treatise seems to bear out the reviewers' criticism. For example, the following passage might be condensed, and the blue pencil might be employed to improve the rest of the work.

"The aim of the work is to present the entire subject of the combinations of normal and modified celluloses—in such completeness, clarity, accuracy and detail, that inability to locate the information desired in the collective index will be postive evidence that the matter sought was either ephemeral, irrelevant, inaccuate, non-existent or valueless." This particular instance of "completeness, clarity, etc." has raised a smile in literary circles, who deplore the waste of paper.

Water Power of the British Empire.

The Water Power Committee has just issued a report which shows how far Britain has lagged behind in the development of this source of energy. The facts may be tabulated as follows:

	Horse Power Available	Horse Power Developed	Per cent
Europe	47,300,000	8,450,000	18
United States ..	32,000,000	6,500,000	20
British Empire	60,000,000	3,000,000	5

As Canada furnishes 32 per cent of the hydraulic power of the British Empire, the table when reconstituted, gives:

Europe	47,300,000	8,450,000	**18**
Canada and United States	50,800,000	8,805,000	**17.3**
Rest of British Empire ..	41,200,000	695,000	**1.7**

There can be no doubt, when these figures are examined, that paper mills in England have to meet a heavy handicap owing to neglect of water power.

The Determinationur of Sulph Dioxide & Trioxide in Burner Gases

By R. DIECKMANN. Translated by CLARENCE J. WEST.

Writing in Der Papierfabrikant for April 1, 1921, Dieckmann points out that recently the importance of an exact determination of the sulphur dioxide and sulphur trioxide content of sulphur burner gases has been emphasized by Sander, since sulphur trioxide in the burner gases means a loss in the preparation of the sulphite acid solution. Sander found, in his study of sulphite, thiosulphite and polythionate, that an excess of mercuric chloride solution reacts with sodium bisulphite to form a water-soluble complex compound, sodium mercurosulfonate, $HgCl.SO_3Na$, and hydrochloric acid, in the proportion of one molecule of hydrochloric acid to each molecule of sulphurous acid.

Sander based his new method for the investigation of burner gases upon this reaction (See West's translation in Paper for December 8, 1920). The method has the advantage that the determination of both sulphur dioxide and sulphur trioxide may be carried out with one solution and one piece of apparatus.

Dieckmann, on the other hand, believes that it is simpler to investigate and analyse the burner gases with the Orsat apparatus. The same point of view is held by Krull, and by Schilling, who has modified the Reich apparatus, which modification he calls the "gas washing flask." Krull, in discussing the apparatus of Schilling, concludes that the determination of sulphur dioxide and sulphur trioxide in burner gases is easily and accurately carried out in this apparatus. In comparison with the Orsat apparatus, less time is consumed, and it has the further advantage that with the Orsat apparatus one must use a third absorption flask. The variation in results between the Reich and the Orsat method was found to be 2.2 per cent, a value which is sufficiently accurate for technical control apparatus.

Stimulated by this work, Dieckmann has compared the new Sander method with the Orsat method, using the flask employed by Krull. Although the time needed by the two methods seemed to be about the same, yet the whole operation in which the gas washing flask is employed is simpler than the use of the Reich absorption flask. The end point of the reaction is easily recognized.

In working with the Sander method, the end point of the reaction, while not as sharp as by the use of iodine solution and starch, or sodium hydroxide and phenolphthalein, is fairly sharp. In the titration with tenth normal sodium hydroxide, after the addition of the sodium hydroxide, the end point is more difficult of recognition. In the course of the present investigation, it was found that the addition of the mercuric chloride as well as the titration with tenth normal sodium hydroxide may be omitted, since the determination of both sulphur dioxide and sulphur trioxide may be carried out in the same absorption flask, which considerably simplifies the method as well as avoids the use of expensive mercuric chloride.

One fills the flask about three-fourths full of distilled water, then adds 10 cc. of tenth normal sodium of hydroxide, and uses as indicators phenolphthalein and methyl orange; upon passing through the gas (suction) the color change from red to yellow is very sharp. One records the number of cc. of water which has been displaced and then continues the gas until the sodium hydroxide is neutralized; the color change to orange may be easily recognized. The amount of gas first recorded (that is, the number of cc. of water displaced) corresponds to the volume per cent content of sulphur trioxide and sulphur dioxide; the second volume of water gives the volume per cent content of sulphur dioxide.

For example, the first volume of water measured was 120 cc., equal to 8.35 vol. per cent of SO_2+SO_3; the second measurement give 248—120 cc. or 128 cc. water, equal to 7.90 vol. per cent of SO_2; the vol. per cent of SO_3 is, therefore, 0.45 per cent.

This method avoids the titration of the neutralized sodium hydroxide, and also the use of iodine solution in the determination of sulphur dioxide in Reich's method; one thus works with a single solution, and without changing the apparatus, and is therefore a simple method and gives a sufficiently accurate control of the burner gases for the plant.

The following tables gives some of the results obtained with the various methods:

	Sander	Orsat	Reich	Dieckmann
Vol. per cent SO_2+SO_3 ..	8.44	9.20	8.90	8.90
SO_2	7.95	8.04	8.10	8.25
SO_3	0.49	0.80	0.80	0.65
Per cent of SO_3 in mixture	5.81	8.70	8.99	7.30
Vol. per cent SO_2+SO_3 ..	7.86	8.60	8.50	8.50
SO_2	7.35	7.80	7.95	7.80
SO_3	0.51	0.80	0.55	0.70
Per cent of SO_3 in mixture	6.49	9.30	6.47	8.24
Vol. per cent SO_2+SO_3 ..	8.45	8.60	8.75	8.75
SO_2	8.23	8.00	8.35	8.35
SO_3	0.22	0.60	0.40	0.40
Per cent of SO_3 in mixture	2.60	6.98	4.57	4.57
Vol. per cent SO_2+SO_3 ..	7.38	7.80	7.80	7.80
SO_2	7.06	7.20	7.35	7.45
SO_3	0.32	0.60	0.45	0.35
Per cent of SO_3 in mixture	4.34	7.69	5.77	4.48
Vol. per cent SO_2+SO_3 ..	7.01	7.80	7.55	7.55
SO_2	6.75	7.20	7.15	7.05
SO_3	0.26	0.60	0.40	0.50
Per cent of SO_3 in mixture	3.71	7.69	5.30	6.62

It is seen from the table that the value for sulphur trioxide according to Sander's method is always too low, which is ascribed to the difficulty in recognizing the color change of methyl orange when titrating with tenth normal sodium hydroxide. The simplified method described in this article, however, gives values which agree well with those obtained by the Reich method, which can only be obtained by the accurate work with the gas washing flask.

Dieckmann therefore recommends the use of this method, which is accurate and simple, which does not consume much time and which avoids the use of the expensive chemicals iodine and mercuric chloride.

The calculations may be simplified by the construction of a curve showing the relation between the amount of water which flows out of the apparatus and the volume per cent of sulphur dioxide.

The Broke Hustler's Christmas Number has a supplement which describes pictorially the many active organizations that help make the social life at Iroquois Falls so interesting.

CONDITIONS IN AUSTRALIA.

The question of Canadian trade with Australia and New Zealand, particularly in connection with paper, has lately been to the fore, in relation to preferential tariffs. What are the prospects of Canada holding her own or of increasing her exports to Australasia?

Mr Norman E. Wainwright, who has just returned from a two months visit, in an interview with a representative of the Pulp and Paper Magazine, gave his opinions as to our prospects in the sister Dominions. Mr. Wainwright represented the Howard Smith Paper Mills, Limited, and the Provincial Paper Mills, Limited. He investigated market conditions, and was also successful in securing some good business. In New Zealand he visited, Auckland, Wellington, Christchurch, and Dunedin; and in Australia, Sydney, Melbourne, and Adelaide.

"When I arrived in New Zealand," said Mr. Wainwright, "I found business conditions similar to those existing at the commencement of the year in Canada. They were beginning to realise that a slump was in progress; prices which had reached even higher levels than here, were falling rapidly, and many serious losses were being made both in general business and in the paper trade. The paper jobbers had been more or less speculating and carried heavy stocks. New Zealand and Australia were affected more than most countries, for the reason that the orders were not arbitrarily cancelled as in some other countries. The trade was going through a period of liquidation, and for six months prior to my visit practically no buying had been done. Firms were interchanging their stocks and carrying on in this way. It looked as if it were not possible to do any business, but I did succeed in getting some fair orders, mainly from the publishers.

"New Zealand is very patriotic, and the people do not limit their patriotism to the Old Country—they include Canada, recognizing that we are a part of the Empire. When I arrived the Legislature had the tariff under consideration. Canada was given equal preference with the United Kingdom, and was also given a preference on writing paper, which previously had not been included in the preferential tariff.

"In my opinion there is a chance of Canada developing a good business with New Zealand, particularly now that we have a preference. We should do increased trade in writings, bonds, printing, and book papers.

"Up to a certain period there was a misunderstanding as to the facts in relation to Canada's position with reference to the paper trade, and, under the impression created by propaganda, there was a mistaken feeling that New Zealand did not get much consideration from Canada during the war. Later, however, when the actual situation was made clear, and the publishers in particular realized that their interests had not been sacrificed, buyers of newsprint were convinced that they had not been charged unreasonable prices—in fact one of the largest purchasers made it known that he and other publishers were satisfied with the action of the Canadian newsprint firms, and that orders would be placed in Canada, provided of course the prices were competitive. During the war the prices of Scandinavian paper were very high in comparison with those of Canadian mills—it was therefore realized that the latter, in not forcing quotations higher, had treated New Zealand on a fair basis. Although the Scandinavian mills, at a later period, considerably reduced quotations, there was a feeling that this was a merely temporary drop, and that in the absence of Canadian and other competition prices of Scandinavian newsprint would be at once advanced. In other words, the publishers were of opinion that an immediate reduction in price was not the principal factor to be considered, and they were also sufficiently awake to the situation to realize that Canada is and must be the main source of supply of newsprint.

"In contrast to New Zealand, there is no preference for Canadian paper of any grade in Australia, and this country is on the same basis as any foreign country, including Scandinavia, Finland, and even Germany, when that country is able to enter the Australian market. There is a feeling in Australia that Canada is to blame largely for the present position, as no advantage was taken of the opportunity to negotiate for a preferential tariff. The Bill recently adopted allowed a preferential rate to be negotiated at the discretion of the Minister of Customs. The impression I received was that in order to obtain a preference Canada will have to reciprocate by granting something in return. Reference was made particularly to wool, fruits, and dairy produce.

"Australia should logically be one of Canada's best customers for paper. There is a large demand, particularly for grades that we are specially equipped to make. Temporarily the rate of exchange, combined with the duty, places us at a great disadvantage. At the time I was in Australia there was a certain amount of opposition to the British preference, even among publishers, on the ground that such a preference was calculated to create a monopoly and to lead to artifically high prices even from the country with which they most desired to do business. There was, I found, a mistaken idea that the paper trade of Canada was controlled from the United States. There was also a feeling in Australia that first consideration should be given to Great Britain, and the second to Canada. There was a distinct impression that many grades of paper which were imported from Scandinavia should come from Canada, but in order to get this business we must meet market conditions and competitive prices."

UNIVERSALLY TRUE.

(From the Brown Bulletin.)

Out of many thousand military suggestions contributed to the American Government by private citizens during the war, it is said that twenty-five were good.

That seems a small percentage, but in fact it was big enough to win the war!

And there was only one way to get the useful suggestions — namely to call on the brain power in America for voluntary service and to sift and select the ideas that would serve.

Now, the big enterprise of making pulp and paper, and all the products that follow on, is not so much a question of horse-power as of brain power. The Brown Company will succeed, as a Producing organization, just so far as it succeeds as a *Thinking* organization.

Your bit of paper dropped into the suggestion box may or may not be important in itself, but it is mighty important to *you* because it marks your enlistment as a *Producer of Ideas*, and your second—or your hundredth—idea may be a hummer.

So, go to it!

The untaught children of to-day are the unchurched multitudes of to-morrow.

Pulp and Paper Week

The following is a list of the meetings to be held in Montreal during January 25-27, 1922. These include a number of meetings of Fire Protective Associations.

CANADIAN PULP AND PAPER ASSOCIATION.

Annual Meeting, Ritz Carlton, Friday, January 27, at 10 A.M.

Annual Luncheon, Ritz Carlton, Friday, January 27th, at 1.30 P.M.

Annual Dinner, Ritz Carlton Hotel, Friday, January 27th, at 7.15 P.M. preceded by a Reception by the Officers.

Bag Section.—Annual meeting, Association Rooms, 701 Drummond Building, at 10 A.M.

Board Section.—Annual meeting, Vice-Regal Suite, Ritz Carlton Hotel, Thursday, January 26th, at 4 P.M.

Book and Writing Section.—Annual meeting, Association Rooms, 701 Drummond Building, Thursday, January 26th, at 2.30 P.M.

Coated Paper Section.—Annual meeting, Green Room, Ritz Carlton Hotel, Friday, January 27th, at 12.30 P.M.

Chemical Pulp Section.—Annual meeting, Vice-Regal Suite, Ritz Carlton Hotel, Thursday, January 26, at 10.30 A.M.

Felt Section.—Annual meeting, Association Rooms, 701 Drummond Building, Thursday, January 26th, at 10 A.M.

Mechanical Pulp Section.—Annual meeting, Vice-Regal Suite, Ritz Carlton Hotel, Thursday, January 26th, at 2.30 P.M.

Newsprint Section.—Annual meeting, Vice-Regal Suite, Ritz Carlton Hotel, Friday morning, January 27th, immediately at close of Association annual meeting.

Technical Section.—Annual meeting begins in the Ball Room of the Ritz Carlton Hotel, at 9.30 A.M. Wednesday, January 25th and continues at 2.30 P.M. Wednesday; 10 A.M. and 2.30 Thursday. Special luncheons at 1 o'clock each day in the Grill Room. Informal Smoker Wednesday evening at 8.30 in the Grill Room.

Tissue Paper Section.—Annual meeting, Association Rooms, 701 Drummond Building, Friday, January 27th, at 3 P.M.

Woodlands Section.—Annual meeting in the Ladies' Ordinary, Windsor Hotel, morning and afternoon of Thursday, January 26th, beginning at 10.30 A.M. Afternoon meeting starts at 3 P.M.

Wrapping Paper Section.—Annual meeting, Association Rooms, 701 Drummond Bldgs., Wednesday, January 25th, at 2 P.M.

Newsprint Service Bureau.—Annual meeting, Vice-Regal Suite, Ritz Carlton Hotel, Friday, January 27th, at 3 P.M.

Cost Accountants and Engineers, Newsprint Service Bureau.—Annual conference, Windsor Hotel, Thursday, January 26th, at 10 A.M.

Province of Quebec Limit Holders' Association.—Annual meeting, Windsor Hotel, Wednesday, January 25th, at 11 A.M.

Quebec Forest Protective Association, Limited.—Annual conference, Windsor Hotel, Wednesday, January 25th, at 2.30 P.M.

Annual Business meeting, Windsor Hotel, Thursday, January 26th, at 9 A.M.

St. Maurice Fire Protective Association, Limited.—Annual meeting, Windsor Hotel, Wednesday, January 25th, at 9.30 A.M.

Southern St. Lawrence Fire Protective Association, Limited.—Annual meeting, Windsor Hotel, Wednesday, January 25th, at 9.30 A.M.

A Bureau of Information and Reception Headquarters, will be established in the Green Room, First Floor, Ritz Carlton Hotel, with an Association representative in charge. All members and guests are invited to register there on arrival and make use of its facilities.

TAX ON EXPRESS SHIPMENTS DROPPED.

The public will save approximately $1,500,000 a month as a result of the elimination of the war tax on express shipments, according to George C. Taylor, President of the American Express Company.

The "Revenue Act of 1921" eliminates the war tax of one cent on every twenty cents and fractions thereof in transportation charges on all express shipments. This tax during the year of 1920 amounted to $17,502,918. The average transportation charge for each express shipment was approximately $1.50 and the average war tax for each shipment was eight cents.

The elimination of the tax, therefore, will virtually amount to a decrease in rates of a little over five per cent. Mr. Taylor believes that this should have a tendency to stimulate business and thereby accelerate the rapidly improving conditions throughout the entire country.

"The American Railway Express Company handles approximately one million shipments a day or nearly four hundred million shipments a year," Mr. Taylor goes on to say. "The elimination of the tax will relieve the American Railway Express Company of an immense amount of labor which has been involved in calculating, entering on way bills and collection of tax, not to mention the expense of checking and accounting entailed.

"The Treasury Department has requested express carriers to advise all claimants who have claims pending for overcharges or who file such claims after December 31st, 1921, that claim for refund of tax should be filed on Treasury Department Form No. 46, with the Commissioner of Internal Revenue, within four years from the time tax was paid, claim being barred by statute of limitations if received after such time."

Mr. Taylor points out that as the Revenue Act becomes effective January 1st, 1922, the tax on all shipments forwarded "prepaid" on or before December 31st, will be collected. On shipments forwarded "collect" and arriving on or after January 1st, the tax will not be assessed.

FOREIGN TRADE FOR 1921 SATISFACTORY.

Our foreign trade for 1921 must be looked on as highly satisfactory, for, if exports have declined, imports have gone down in even greater degree, says the monthly letter of the Royal Bank of Canada. We are not buying silk, cotton or wool and their products, on the lavish scale of 1920, and what we do buy, costs us far less. Imports of coal and petroleum, too, have gone down slightly in value. The result is that our trade for eleven months of 1921 shows an unfavorable balance of only 23 million dollars, compared with one of 128 million dollars in the preceding year.

British Trade News

(From Our London Correspondent.)

London, 15th Dec. 1921.

The chairman of the British Wood Pulp Association (Mr. S. Nicol) has been elected Managing Director of Messrs. Berner, Nichol & Co., Ltd., formerly known as Berner & Nielsen, a name prominently associated and highly respected in wood pulp circles. The firm pushes Scandinavian pulp in the United Kingdom and Mr. Nicol was originally a junior clerk in the office.

Developments in Newfoundland.

Mr. H. D. Reid, President of the Reid Newfoundland Co., has returned to St. John's. He was on a two month's visit to England securing the interests of capitalists in the Newfoundland Hydro-Electrical water power scheme for the manufacture of paper and pulp. It is intended to provide power up to 235,000 h.p. and the Humber River fall will be partly utilized. Mr. Reid, who was taking out with him Mr. J. M. Alexander, Mr. H. S. Waite, and Mr. H. E. Whitehouse, of the hydro-electrical department of Messrs. Armstrong, Whitworth & Co., a well-known firm of engineers, of Newcastle-on-Tyne,—who are also interested in the scheme—said that he preferred British capital in the scheme to that of the States. A good deal depended on the attitude of the Newfoundland Government toward it and if they assisted financially the scheme would go through. The Government, however, were fully alive to the importance of the scheme for developing the industry in the colony and he fully expected their support. The Hon W. R. Warren K.C., Attorney-General for Newfoundland, who was a fellow passenger on the liner at Liverpool with Mr. Reid, stated that he understood the scheme would mean the introduction of £3,000,000 of capital into Newfoundland and he felt sure the Government would support it.

Heavy Mill Loss.

The serious state into which some of the British paper mills have fallen is shown by the balance sheet of Olive's Paper Mill Co. The accounts are made up to July 23rd, 1921 and include trading carried on by Olive Brothers on behalf of the company from January 1st to the 23rd July 1920. After charging bank and debenture interest, directors' and trustees' fees, income tax, and allowing £31,091 for depreciation of mill buildings and plant, there is a loss of £70,792. Stocks of paper and raw materials have been brought in at cost or market price, which ever was lower, and the directors feel that, given revival of trade the company should be able to go forward and make profits. A remarkable feature of the company's report is a claim made by the Government in respect of excess profits duty on the trade done between the 1st January and 23rd July 1920. The company are very rightly resisting the claim which, to say the least, is preposterous. The directors have also a claim for repayment of excess profits duty. Sanction for additional £100,000 borrowing powers is asked for.

Wood Pulp Review.

By the time these notes will appear in print we will be entering upon a new year. Up to the present the outlook is not very hopeful for either paper or pulp men; but there is one thing we are certain of and that is the year 1922 cannot be worse, as regards buying or selling, than 1921. For pulp men the past 12 months have proved most trying and the rise and fall of the markets—and the precarious rates of exchanges—played havoc with balance sheets of many trading and manufacturing concerns. But we must feel proud of the shipments of Canadian groundwood that reached England in 1921. Apart from the good qualities of the pulp, the supplies have been a special feature and it is to be hoped efforts in the coming year will not be relaxed, but strengthened, in retaining the position now occupied in British markets. From what I can hear groundwood producers are turning out a suitable pulp for the United Kingdom and it only requires the chemical pulp men to do their "bit" also in helping to capture a share of the market. How pleasant it is to hear British paper mill men say: "Canadian mechanical is very good." They say it is ahead of Scandinavian and that is what we want to hear. There is a chance now for the sulphite men in 1922 to earn the reputation of the groundwood men in 1921.

At the present time the market for all pulps is just as dull as it opened at the beginning of the year, and, although I am unable to give the year's imports until the end of January, it may safely be assumed that they are much below those of 1920.

The comparison of prices in 1921, however, are interesting as the following figures show:—

	January	December.
Sulphite (No. 1)	£55	£20
Easy Bleaching	42½	14½
Sulphite (Strong)	37½	12
Unbleached Soda (No. 1)	37½	11
Soda Kraft	33	11
Groundwood (wet)	10	5½
Groundwood (dry)	20	11

Prices prevailing today are nearly double those of 1913 in some cases, owing to high cost of production and other elements.

The Paper Industry.

It would be invidious to try and give a comparison in the prices of papers placed on the British market. We have Canadian, Scandinavian, German, Finnish, American, French, Belgian, and home produced papers all in competition. It is said that Finnish papers can be sold at £10 a ton with a good profit—that is newsprint. Indeed, the prices quoted for papers produced in foreign countries are in some cases absolutely beyond the comprehension of a decent papermaker. We do know that German mills, owing to the subsidy received from the German Government, are enabled to put cheap papers on the market and added to their favor—and Finland's, also—are the depreciations in the rates of exchange. The market for paper is consequently "topsy-turvy"—and it has been so since the beginning of 1921. In British mill circles the conditions are really critical, unemployment is rife, and all sorts of wild-cat schemes are mentioned to stabilize the European money markets in order that the trade and industry of Great Britain may be "got going." We are in an age of economy; we are in an age of science; and we are in an age where our old enemies are getting "their own" back by choking us with their Government subsidized paper. In Finland and Germany mills are busy in many ways; in the United Kingdom they are idle in more ways than one. Some of the mills in England have very depressing reports on their 1921 work. Since 1919 they have been in a vice, with the Government taxing them on one side and the foreigner underselling them on the other. Added to these two elements are strikes and labor grievances.

There is one feature of the British paper industry that must not be overlooked and that is the Technical Section. It has made great strides, is doing a valuable work and the benefits derived from this work will be reaped in future years.

The Outlook.

A big newspaper publisher who caters to financial circles said to me the other day "Peace in Ireland will make a big difference in the money markets and I predict a change for the better." The peace, however, may settle up the Stock Exchange, as a lot of Irishmen are connected with it, but it may safely be assumed that while cheap paper money is in circulation at home and on the markets of Europe and elsewhere the outlook for trade and industry is not very bright. If Germany can buy pulp in Finland cheaper than any Canadian mill could ever dream of producing it, and produce paper from it and sell the paper in England below what any English mill could ever dream of producing it, where can any country with a decent money standard step in and compete against such a country, as say Germany? That is the position and until it is altered the outlook in 1922 will be a black one in an open market.

"ONE INCH SQUARE."

(Courtesy The Wrean Paper Co.)

You send us a sample which must be matched,
  And returned intact, not even scratched.
We must promise exactly to get your shade,
  And to use no pigments which may fade,
We would test the color with every care,
  But—the sample is only one inch square.

The fibre you say is rag and wood,
  Before giving our price, we would make this good.
The bulking, too, must be matched, we see,
  We must keep exactly to .003.
But the loading, we fear, we cannot test,
  And we have to guess at all the rest,
We cannot try if the ink will bear,
  For—the sample is only one inch square.

We notice the paper has to pull,
  On the "Leunig" a mean of 20 full,
And the "Mullen" and "Southworth" too, must show.
  To full tdvantage their quid pro quo.
But we scarcely can judge e'en the finger tear,
  From a sample only one inch square.

Whether pattern is plated, or simply rolled,
  If it shrinks or stretches, in heat or cold,
If it folds one hundred or only ten,
  And will stand the rubber, as well as the pen,
These matters, we fear, can only be guessed,
  For we cannot apply a single test,
And think, perhaps, it was scarcely fair,
  To send us this sample one inch square.

W. B. Greeley, chief of the United States Forest Service, in his annual report made public last week, expresses the opinion that wise handling of the Alaskan forests will result in the development there of a paper industry "as permanent as the paper industries of Scandinavia and capable of supplying a third of the present paper consumption of the United States." This, he adds, "is an opportunity which should not be thrown away by inviting unrestrained and destructive exploitation."

PAPER EXPORTS INCREASED, BUT VALUE DROPPED.

Canadian pulp and paper exports for November were valued at $9,441,850, a decline of $4,912,585 as compared with November 1920, and of $487,625 as compared with the preceding month of October.

Exports of newsprint for the month amounted to 1,341,698 cwts., valued at $,339,358, compared with 1,267,620 cwts. valued at $6,926,465 in November, 1920, a gain of 78,478 cwts., in volume and a loss of $1,587,107 in value. They exceeded October shipments by 26,941 cwts. in volume but declined $171,246 in value.

Exports of woodpulp of all descriptions during November amounted to 1,557,136 cwts., an increase in volume of 547,646 cwts. over November, 1920, and were valued at $3,707,892, a decrease of $2,649,078 from last year. Compared with the preceding month of October, woodpulp exports gained 373,704 cwts. in volume and $620,386 in value.

Exports of pulpwood for the month amounted to 49,476 cords, valued at $614,974, compared with 137,090 cords, valued at $1,948,241 in November last year, and with 47,023 cords, valued at $587,674, in October.

Comparative details for November follow:

	1920	
Paper —	cwts.	Value
Book Paper	5,292	$ 64,463
Newsprint	1,267,620	6,926,465
Other paper		906,557
Total		$7,897,465

	1921	
Paper —	cwts.	Value
Newsprint	1,341,098	5,339,358
Book paper	66	$ 719
Other Paper		393,881
Total		$5,733,958

	1920	
Woodpulp —	cwts.	Value
Sulphate	183,102	$1,123,967
Sulphite Bl	100,806	649,255
Sulphite Unbl.	336,504	2,220,424
Groundwood	263,976	1,016,184
Total	1,009,490	$6,456,970

	1921	
Woodpulp	cwts	Value
Sulphate	289,642	$ 854,298
Sulphte Bl.	100,806	649,255
Sulphite Unbl.	394,492	1,138,639
Groundwood	712,196	1,065,700
Total	1,557,136	$3,707,892

Countries of destination were:

Paper — United Kingdom, $126,937; United States $5,117,093; other countries, $489,928.

Woodpulp — United Kingdom, $352,235; United States, $3,119,597; Other countries, $236,060.

Comparative figures for the first eight months of the current fiscal year show:

Year	Paper	Pulp	Total
1921	$44,980,185	$22,599,557	$67,579,742
1920	59,051,483	59,252,433	118,303,916

1919, 631,941 cords, calued at $6,321,540.

Exports of pulpwood to the United States for the eight months period compare as follows:

1921, 518,967 cords, valued at $6,749,433;
1920, 915,336 cords, valued at $11,504,496;
1919, 631, 941 cords valued at $6,321,540.

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Researches on Lignin. Svensk Pappers-Tid., No. 12, (June 30, 1921). When sodium chloride is added to sulphite waste liquor a precipitate is obtained. although the reaction has been known for some time, it has not received adequate study. The precipitate first occurs when about 21 g. of salt are added to 100 g. of unconcentrated liquor. To determine the amount of solids precipitated from the liquor, liquor of known solids content is treated with salt, the mixture warmed to 70°C, and the precipitate filtered on a Gooch crucible, washed with salt solution, and dried to constant weight at 100°C. The amount of salt in the precipitate is determined by dissolving in water and titrating with decinormal silver nitrate. It s found that 26.5 percent of the dry solids of the lye can be precipitated by means of salt. According to Klason the solids contain about 44 percent of lignin. Since lignin, which is precipitated by salt, is virtually insoluble in dilute salt solution, it must consist, as Oman, in particular, has pointed out, of at least two substances containing sulphur. Thus, the lignin precipated by the addition of salt is found to be alpha-lignin, and the portion in the filtrate beta-lignin. Samples of liquor from a sulphite mill proved by this method of treatment to have free lignosulphonic acid and alpha-lignin sodium sulphonate. The former was obtained by dissolving 5 g. of the precipitate in 100 cc. of distilled water, and then precipating with 50 cc. of concentrated hydrochloric acid. The precipitate thus obtained is readily soluble in absolute alcohol.—P.B.

A-3. Fiber from nettles. J. ELSTER, Ger. patents No. 305,049 and 308,525, Class 29b, Group 2. **Papier-Fabr.**, xix, 821, 880, (1921). The nettles are soaked in caustic soda to loosen the bark. The nettles are crushed to facilitate the absorption of the liquor by the stems.—H.E.W.

A-4. Preparation of Cellulose from Wood. Muller, Ger. patent No. 339,303, Class 55b, Group 1. **Papier-Fabr.**, xix 786, (July 29, 1921). A mixture of 3 per cent nitric acid and 10 percent sulphuric acid solutions for 14 dys. at 20°C or a 0.5-1.0 percent solution of nitric acid at 60°C for 2 days in contact with pine wood reduces it to a lignin-free easy bleaching fiber (52 percent). The fiber is given a treatment with dilute soda solution subsequent to the acid treatment.—H.E.W.

A-14; K-18. Tester for Bending and Breaking Qualities of Cardboard. KIRCHNER, Ger. patent No. 338,-298. **Papier-Fabr.**, xix 884, (Aug. 19, 1921). The cardboard to be tested is clamped in a hinge and the angle through which it may be bent without breaking is measured and the tension required for breaking is registered by means of a spring.—H.E.W.

A-14. Strength of Paper. A. KLEIN. **Papier Ztg.**, xlvi, 2786, (Aug. 6, 1921). The author compares the strength of cotton, linen and pine fibers with that of cast iron, malleable iron and welding iron. He shows that the strength of fiber compares favorably with that of iron. Numerical data are given.—H.E.W.

A-15. Detection of Oxycellulose. E. BECKER **Zellstoff u. Papier**, i, 5, (1921).—The carboxyl group of oxycellulose is determined as follows: 2 g. of air dry fiber in 50-60 cc barium hydrate solution are allowed to stand 4 hrs. in a closed vessel. The fiber is then sucked dry, washed with distilled water till the washings are free from barium, and ashed. The barium is determined in the ash as barium sulphate. The percent of barium in exycellulose prepared by various means is given. Oxycellulose prepared by the use of bleach is very high. The method is longer than the titration method of Schwalbe and Becker.—H.E.W.

D-4. Pulp Grinding Stones. Anon. **Papier-Fabr.**, xix, 777, (July 29, 1921). The author mentions the German sources of stones suitable for use in pulp making, the properties of the stones and discusses the relation of quality of stone to that of the pulp they yield. The relation of the bonding agent in the stone to the nature of the liquid used in the artificially and particulars concerning these stones are given. The mountings for the stones and the care to be exercised in using them are mentioned.—H.E.W.

E-4. Modern Sulphur Burners and the Preparaton of Sulphite Liquor for Pulp Mills. Papir-Journalen, No. 8, (May 31, 1921). Many practical difficulties are met in the preparation of a good sulphate-free liquor. One of these, the formation of sulphur trioxide (SO_3) in the sulphur burners), is avoided by a new system whereby oxidation in the presence of iron is reduced to a practical minimum.—P.B.

E-5. Consumption of Steam in Cooking and Drying Sulphite Pulp. Papir-Journalen, No. 12, (Sept. 3, 1921). As regards steam consumption, the cooking of strong pulp is more economical than the cooking of easy bleaching pulp, namely about 2 kg. of steam per kg. of pulp in the first case, and 2.2 kg. in the second. —P.B.

E-5. Cooking wood (by the sulphite process). C. G. SCHWALBE. **Zellstoff u. Papier**, i, 11, (1921). The reduction of shredded wood with chlorine is effected only under 5 to 6 atmospheres pressure when 30 percent of the reagent on the weight of the wood is used. The hydrochloric acid formed must be reconverted into chlorine. The use of chlorine or chlorine dioxide in organic solvents is not economical. In the first 8 hrs. of the Mitscherlich cook the ash content of the wood rises from 0.48-1.8 percent. Lignin dissolves in the last stages of the process. After the fifth hr. the methoxyl content is one-fifth less than at the outset, and rises after the eighth hr. to its original value. Hexosans dissolve first but pentosans are very resistant. The economic use of old and fresh wood are mentioned.—H.E.W.

E-0; F-0. Problems of Heat in the Pulp Industries Svensk Pappers-Tid., No. 8, (April 30, 1921). The exact expenditure of steam in modern mills is traced at length. A careful comparison is made of old and new processes of cooking sulphite and sulphate pulps, of the number of calories consumed both in cooking and in the formation of by-products; similarly in drying, reducing the quantity of water in the liquor and in the pulp, and on the basis of economy.—P.B.

F-2. Production of Soda Pulp with the Simultaneous Recovery of Chemical Compounds from the Waste Liquor. Svensk Pappers-Tid., No. 14, (1921). The recovery of valuable products from the waste liquor has hitherto yielded insignificant results, because in most cases the liquor contains sulphur compounds. A new cooking process, in which sulphur is not employed, has been worked out with the results that while the quality of the pulp has not deteriorated, the recovery of useful matter has been facilitated. The new process is not more expensive than the old soda process. The quantity of waste is considerably greater, reaching 100 kg. of methyl alcohol and acetone, and 100 kg. of oil per ton of pulp. The new process is also free from odor. One of its advantages is that it can be employed for the production of chemical substances when, for any reason, the mill is not turning out cellulose. P.B.

F-0. Action of Alkalies and Alkaline Earths on Textile Fibers. GRIMM. **Zellstoff u. Papier**, i, 81,87, (1921). This is a historical resume of the literature dealing with the action of alkalies on fibers. The processes of Planche and Piette, Mierzinski, Hoyer, Hofmann, Dahlein, Klemm, Kirchner and Dalen are mentioned. Formulas for the cooking liquor in use in the industry at the present time are given. H.E.W.

G-6. Rotary Knotters of Large Capacity. Pappen u. Holzstoff-Ztg., No. 9, (March 3, 1921). A new machine is described whereby knots and entangled fibers are removed from the pulp in drums, which rotate slowly.—P.B.

G-9. Formation Roll. ALBERT BUCHGRABER, Ger. patent No. 338,332, Class 55d. **Papier Ztg.**, xlvi, 2347, (July 26, 1921). An arrangement by means of which sheets of pulp can be automatically removed from the formation roll is patented. Air is blown out of the roll at the right point with respect to the revolution, and the end of the sheet is directed by means of compressed air between two press rolls, one of which is provided with scraper for the removal of the sheet. The holes in the rolls are sufficiently small to prevent pulp from entering.—H.E.W.

K-7. Beater. K. A. THORSEN, Ger. patent No. 339,232, Class 55c, Group 4. **Papier-Fabr.**, xiv, 786, (July 29, 1921). Beater in which the bed plate and roll may be pressed against each other with pressures which can be regulated.—H.E.W.

K-10; K-18. Sizing of Boards. Pappen u. Holzstoff Ztg., No. 34, (July 28, 1921). The author discusses the practical difficulties of sizing paper and boards, and describes in detail the method of engine sizing. P.B.

K-10. Rosin Sizing. R. SIEBER. **Zellstoff u. Papier**, i, 15-19, (1921). The author investigated the precipitating power of alum in the presence of free rosin suspension prepared by dissolving rosin in alcohol, and adding the solution to water. The precipitating power of the various salts follow the regular rule, trivalent aluminium and iron exerting stronger action than the monovalent elements. The analysis of the precipitate showed the presence of both cations and anions. The simultaneous action of several electrolytes is less than the sum of the action of each acting alone. Rosin suspensions are stable in the presence of hard water.—H.E.W. (For complete translation see **Pulp and Paper**, xix, 1051-1052, Oct. 13, 1921.)

K-12; N-4. Saving Steam in Drying Machines. K. L. Thunholm. **Svensk. Pappers-Tid.**, 24, 132-134. (April 15, 1921). Of the steam consumed in the pulp and paper industries considerably more than half is employed for drying purposes. The economy of steam is therefore of great importance. Hitherto, efforts have been concentrated on reducing as far as possible the quantity of water in the pulp before drying, and proportionately the quantity of steam required. Factors in any correct estimate of cost are based first on an exact knowledge of the physics of evaporation in the presence of air, while degrees of drying of the sheet is not the only problem. Experiments on the steam consumption of a dozen machines of different types and capacity showed great variations, reaching from 1500 to 6500 kg. of steam per t. of dry pulp. As the consumption of steam is much greater in winter than in summer—the steam used in heating the air being 1200 kg. in winter and 600 in summer—it was found that prewarming the air effected a great economy. Also, the air coming in contact with the sheet should be as dry as possible. A device is described for saving steam: it consists of several elements or accumulators, supplied by the waste heat and moisture which contain practically all the callories evacuated by the paper machine. At the Orebro Paper Factory it was found that this device effected a saving of 25 percent of steam in winter and 15-20 percent the year round. Improvements promise a saving of 35 per cent. P.B.

K-12. Ryberg Machine Wire. Papir-Journalen, No. 22 (Dec. 11, 1920). The wire is a device for increasing production by reducing friction and choking, whereby the cost of cleaning with steam is eliminated, as well as marking of sheet. The wire also operates as a drive for the rolls.—P.B.

K-12. Regulation of Machine Wires. Papir-Journalen, No. 7, (May 14, 1921). The wire is operated automatically by means of a sliding plate in connection with a spindle and a bent arm, whereby the rolls are regulated and held in a single position.—P.B.

K-12. The Use of Machine Wires in Board Mills. Pappen u. Holzstoff-Ztg., No. 23, (June 9, 1921). The author gives a detailed description of the strain and wear to which wires are subject, and of the measures essential for their efficient working.—P.B.

K-12. Dryer for Paper. CURT BAUER, Ger. patent No. 339,721, Class 55d, Group 19, **Papier-Fabr.**, xix 880, (Aug. 19, 1921). The paper travels over rolls in a totally enclosed housing. Warm air blows through the channels which are arranged in zig-zag manner. Outlets are provided for the cool air.—H.E.W.

K-23. Safety Paper. POENSGEN and HEVER, Ger. patent No. 338,333, Class 55f, **Papier Ztg.**, xlvi, 2763. (Aug. 4, 1921). The fundamental idea is based on photographic principles and depends on the fact that the papers are sensitive to acids and erasures and that the reproduction of color is difficult.—H.E.W.

K-16. Manufacture of Wrapping Papers. Pappen u. Holzstoff-Ztg., No. 21 and 23, (May 26 and June 8, 1921). A cheap and serviceable product is best made out of old papers, carefully sorted and cleaned. The process consists in preliminary treatment in the hollander followed by prolonged heating.—P.B.

K-18. Water Consumption in Board Mills. Pappen u. Holzstoff Ztg., Nos. 16 and 20, (1921). Fresh water is employed only for spraying the cylinder and felt. Estimates of the quantity of water used in the kollergang and hollander are given, with lengthy practical details of manufacture.—P.B.

PULP AND PAPER NEWS

The past year proved a disappointing period for the lumber trade in the Province of Quebec, and particularly in Montreal. Prices dropped almost throughout the year, owing to heavy stocks purchased at high figures and to forced liquidation of these rendered necessary by bank and other obligations. A very large amount of lumber was sold, but the close competition rendered it impossible to get prices which would show cost, to say nothing of profit. The consequence was that many mills and wholesalers had to bear more or less serious losses. The reaction in hardwoods was particularly noticeable. The American market failed to show any vitality, while British exports were down to a low point. Prices are now in a more stabilized basis. Price-cutting has almost vanished, and there there is a feeling of confidence which was sadly absent from the market during the greater part of 1921. Some of the larger pulp and paper companies are also manufacturers of lumber, and these found it difficult to dispose of their production at remunerative prices. The cutting in 1921-22 is likely to be on a smaller scale than in the preceding season.

We are pleased to announce that Mr. J. A. Bothwell, of the Brompton Pulp and Paper Company, is now on the road to recovery. Mr. Bothwell recently underwent an operation in the Sherbrooke Hospital.

Mr. G. S. McCoubray of Iroquois Falls, Ont., has accepted a position as assistant superintendent with the Wayagamack Pulp and Paper Co., Three Rivers, Que.

Mr. E. P. Cameron of the Forest Products Labortories, Montreal, was a recent visitor at the Abitibi Mill at Iroquois Fall, Ont.

An unfortunate accident occurred at Weymouth, N.S. Tuesday, when Merril Cook was instantly killed when caught between cars which were being shunted on the siding of the Sissiboo Pulp Mill.

U.S. PAPER PRODUCTION BIGGER IN NOVEMBER.

New York, Dec. 27.—"While business conditions are unquestionably far better than they have been in recent months, and the worst of the depression is over, there seems from a survey of the paper industry as compared with general business, to be no doubt that a spirit of conservatism should be maintained," says The Paper and Pulp Industry, the monthly bulletin of the American Paper and Pulp Association, the federated organization of the paper manufacturers of the United States.

"Conditions in the paper industry, in all its branches, can be said to justify the statement that this industry has entirely liquidated, but there is no reason for undue optimism on this account, for any recovery of business will be slow, particularly until after the inventory and holiday period. Some pulp mills have sold up their output for a year at present prices.

"Orders and production in the fine paper market experienced steady gains during the fall months. Operations advanced from a 50 per cent. level in September to a 75 per cent level in November.

"Early in December the volume of orders declined somewhat as is customary just before the inventory period. Nevertheless, manufacturers feel reasonably assured of a resumption of demand in fair volume immediately after the first of the year as there is a general understocked condition straight through from the consumer to the paper manufacturer.

"After the first of the year there should be a tendency to increase these stocks, but the movement will probably be very cautious."

U.S. NEWSPRINT TARIFF.

Washington, December 28.—Newsprint occupied the attention today of Senate tariff makers, manufacturers asking for protection for their industry and newspaper publishers urging that the paper be retained on the free list as proposed in the Fordney Bill. Canada's newsprint industry came in for a large share of attention.

Opening the discussion with a presentation of the arguments for the manufacturers, Col. Wm. E. Haskell, vice-president of the International Paper Company, declared that the newsprint alone of all paper was unprotected by a tariff and that "the reason is obvious that the press can control legislation."

The witness made no suggestion as to the rate of duty, leaving that, he said, to the judgment of the committee. He added that the industry did not ask for the same protection as given other paper, because "past experience has convinced us of the futility of such a request."

Colonel Haskell told the committee that the prohibition of the export of wood pulp from Canadian Crown lands and the placing of paper on the free list halted "the steady growth of the American newsprint industry." Development of the Canadian industry followed the witness said "production growing from 161,000 tons in 1910 to 883,000 tons in 1920. Imports from Canada were given at 80,000 tons in 1910, and 680,000 in 1920. Besides Canadian competition, the witness added, large supplies were coming in from Germany, Finland, Norway and Sweden at prices ranging from $10 to $20 a ton less than the cost of production in the United States. This has contributed, Col. Haskell added to "what in many ways is the most critical period in the history of the industry."

Case for Publishers.

Opening the case for the publishers, Wm. J. Pape, publisher of the Waterbury, Conn., Republican, said the question before Congress was whether the publishers of the country shall have again imposed upon them such a condition as found by a Senate investigating committee which reported on June 5, 1920, that "certain manufacturers have taken advantage of this shortage (of newsprint) to exploit the purchasers of such paper, and hold them up for excessive unreasonable and wholly unfair prices."

Discussing what he termed the "monopolistic aspects of newsprint manufacture," Mr. Pape said, "strange as it may seem, publishers, who as a class largely dominate public opinion affecting business policies through direct appeal to their readers, have been potentially weak when fighting for a fair price for news print."

"In the past ten years," he added, "there have been at least three grave crises caused by the exploitation of this commodity. Each time the price has soared to undreamed of heights."

What he termed "suppliers' propaganda" about a shortage in 1919 and 1920 caused publishers to turn to Europe for newsprint in quantity, Mr. Pape said. In 1920, publishers, he continued, accepted "the suppliers' propaganda, and in a panic became the victims of some manufacturers and their brokers who took all the traffic would bear."

GERMAN NEWSPRINT COST IS MODERATE.

Advance by German cellulose manufacturers of 81 per cent, in price of their product is not likely to affect price of newsprint coming from that country to American markets to any appreciable extent, says the Wall Street Journal. "Cellulose" corresponds to our sulphite pulp. Berlin cables early this week said the association of cellulose manufacturers had advanced prices to paper manufacturers, which would probably results in considerably higher advertising rates in Germany next year.

Last July, German manufacturers and publishers, under a trade agreement, fixed a price of 3.3 marks a kilo of newsprint paper, which still obtains, and which, on the basis of a mark equivalent to one-half a cent, equals $15 a ton.

Prices today, determined by the Union of German Pulp Makers, are 3.1 marks at kilo for cellulose, equal to $14 a ton, and 2.0 marks a kilo for ground wood, equal to $9.00 a ton.

Using these figures, the following compilation gives approximate cost of a ton of paper in Germany. The proportions of ground wood and sulphite used are the stanrds of American manufacturers:

	Per ton.
Ground wood, 80 per cent	$7.27
Sulphite (cellulose) 20 per cent	2.80
Estimated conversion cost	5.00
Total	$15.07

Thus with $2.80 worth of cellulose or sulphite going into manufacture of one ton of newsprint, an advance of 81 per cent. in prices would increase cost of manufacture of finished product by only $2.27, bringing total from $15.07 to $17.31.

In estimating cost of producing ton of paper, manufacturers usually add 50 per cent. of cost of sulphite and ground wood for conversion of raw product into paper.

If 1921 has been a year of trouble it has been a year of achievement too and long after we have forgotten its trials we will remember its loyalties. Here's to the men who came through.

It is good to feel that the big difficulties are behind us and that the way ahead is clear. It is good to welcome the new year with confidence and courage and faith in a future of promise. It is good to enter into this new year in association with you.—From the Christmas Greeting of the Hammermill Paper Co.

It is easy to take a day off but it is impossible to put it back.

A NEW YEAR RESOLUTION.

The House by the Side of the Road

BY SAM WALTER FOSS

"There are hermit souls that live withdrawn
  In the peace of their self-content;
There are souls, like stars, that dwell apart,
  In a fellowless firmament;
There are pioneer souls that blaze their paths
  Where highways never ran;
But let me live by the side of the road
  And be a friend to man.

"Let me live in a house by the side of the road,
  Where the race of men go by,
The men who are good and the men who are bad.
  As good and as bad as I,
I would not sit in the scorner's seat,
  Or hurl the cynic's ban;
Let me live in a house by the side of the road
  And be a friend to man.

"I see from my house by the side of the road,
  By the side of the highway of life
The men who press with the ardor of hope,
  The men who are faint with the trife.
But I turn not away from their smiles nor their tears
  Both parts of an infinite plan;
Let me live in my house by the side of the road
  And be a friend to man.

"I know there are brook-gladdened meadows ahead
  And mountains of wearisome heights;
That the road passes on through the long afternoon
  And stretches away to the night.
But still I rejoice when the travellers rejoice,
  And weep with the strangers that moan,
Nor live in my house by the side of the road
  Like a man who dwells alone.

"Let me live in my house by the side of the road
  Where the race of men go by;
They are good, they are bad, they are weak, they are strong,
  Wise, foolish—so am I,
Then why should I sit in scorner's seat,
  Or hurl the cynic's ban?
Let me live in my house by the side of the road
  And be a friend to man."

A SAD PICTURE.

The New York *Independent* recently published this humorous satire on the growing scarcity of pulpwood:

[illegible]

(Mss. found written on a piece of bark, A.D. 2200).

The last newspaper ceased publication nearly one hundred years ago. For some time previous to this it had been printed in so fine a type on such tiny sheets that it was necessary to supply subscribers with microscopes in order to make the text legible. A few years ago the manufacturing of wood pulp was suspended and illiteracy began to plunge civilization once more into the darkness of mediaeval times. The final blow came in 2160 when even the *Congressional Record* went under. All the old libraries had long since been repulped to get it out, so there was not a book left in the world, save a few museum specimens. Such traces of culture as remain are maintained only by the phonograph and the moving picture. I, alone, remember how to write and now I die! After me the deluge!

UNITED STATES NOTES

A special course in forestry under direction of the Federal Veterans Bureau will be instituted at the New Hampshire College, Durham, N.H., beginning January 4. The first class is to be made up of a score of men to be assigned by the New England district office of the bureau and will last eighteen months, including about five months under direction in the forests of the State. The men will be trained as rangers, fire wardens, timber estimators and foremen and superintendents in forestry service.

The Oakland Paper Mill, at Manchester, Conn., a branch of the American Writing Paper Company, reopened last week after having been closed nearly a year. The company put to work all its former employees. It was said that enough orders are now on hand to keep the mill in operation for some time to come.

In an effort to arrive at an agreement on wage decreases proposed by the manufacturers, representatives of the International Brotherhood of Paper Workers and paper men from eleven large paper manufacturing companies last week presented their cases to the strike arbitration board in New York City. This board consists of three representatives of the manufacturers and three members of the union, with Judge Frank Irvine of Ithaca, presiding. The manufacturers contend that there has been no appreciable reduction in wages since the peak was reached during the war, and that without a reduction there can be no reduction in the cost of newsprint. Under the employers' proposal the wage of laborers would be cut from 40 to 30 cents an hour and other crafts reduced proportionally. John P. Burke, president of the International Pulp, Sulphite and Paper Mill Workers, stated that the paper makers have already accepted a cut of from 10 to 26 per cent in arbitration proceedings last August. He said that another cut is not justified as there has been no subsequent reduction in living costs. Mr. Burke claims that the strike against the International Paper Company, which is not a party to the present wage agreement, is being waged successfully by the union men. The International is operating its plants on the "open shop" plan, having declined to deal with the union since the break with the latter last Spring. "We have been waging a successful fight against the International Paper Company since last May," said Mr. Burke. "We have 7500 men out on strike. We had a meeting in Albany recently, and voted to give the International Paper Company strikers all the financial and moral support necessary to win the strike." A final hearing on the proposed reduction will be held Jan. 4, at which time a decision will be rendered by the arbitration board.

Preparations are under way for celebrations with elaborate ceremonies to mark the formal opening in February of the Government railroad in Alaska. Driving of a golden spike in the presence of representatives of Chambers of Commerce of many Pacific coast cities will open traffic between Seward and Fairbanks. An excursion over the entire system is planned and the principal towns in Alaska are preparing to celebrate the event.

In discussing the forest problem before the Schenectady Section of the American Institute of Electrical Engineers last Thursday, Dr. H. P. Baker, executive secretary of the American Pulp and Paper Association, proposed that municipal forests be created as a means of relieving the unemployment situation. "Forestry is used in Europe as a means of handling the unemployment problem year after year," said Dr. Baker, "and America needs the municipal forest which would at the same time produce a valuable crop, avoid the economic waste of idle land, while providing employment for large numbers of men." Dr. Baker pointed out that there are in the United States to-day 81,000,000 acres of "loafing" land, an acreage so cut over that artificial restocking is necessary, and yet this land, if properly put to work, would provide enormous quantities of timber for the wood using industries. Dr. Baker said that there is pending in Congress at the present time legislation initiated by the American Paper and Pulp Association in cooperaton with the American Newspaper Publisher's Association, the American Forestry Association and other national organizations which would insure the country's future timber supply. These measures, he said are along the lines of his suggestion. Dr. Baker told of the beginnings of municipal forestation in New York State, at Newburgh, Malone and other cities which are annually planting municipal forest tracts.

Chattanooga, Tenn., has been selected by interests back of the Southern Cotton and Paper Company as the site for the projected plant of this recently organized concern. For a time it appeared as though Nashville would be decided upon as a location for the mill, but largely through the eforts of C. W. Howard, director of the Chattanooga commerce chamber's industrial bureau, Chattanooga won out. Mr. Howard helped materially to bring about the subscription of the last third of the company's stock issue, thus assuring the capital needed to start construction work. Nashville bidders had offered a big bonus to get the industry, which is expected to develop into an important factor in the South. The company is capitalized at $200,000 and it will make paper from cotton linters, using the Reynolds process. The Chattanooga plant will have a capacity of ten tons daily of book paper, or fifteen tons of writing paper.

A new record for handling wood at its docks in Ogdensburg, N.Y., was made during the past season by the Ogdensburg Wood Company, 51,085 cords of wood were unloaded in all, exceeding by 1,013 cords the record of 1920. Data prepared by the officials of the company shows that the open shop system under which the terminal was operated last season proved of advantage to the company. The average number of men employed per boat was 35.8 as compared with 35.5 in 1920, yet the average number of cords unloaded per working hour was 18.9 cords per hour more than in 1920 when the union handlers were employed. The figures also reveal the fact that the boats lay at the docks only 2,105 hours as against 3,416 hours in 1920, and actual working hours amounted to a total of but 761.65 as compared with 1,039.75 in 1920,

CANADIAN TRADE CONDITIONS.

Montreal, December 27. The holidays have interfered with business to some extent. Men's minds are naturally diverted, to a certain degree into other than trade channels, and we can expect no pronounced activity until 1922 is with us. There is, however, an optimistic feeling abroad—men are looking forward with confidence to brighter conditions, inspired with a belief in a revival of trade in Canada, partly due to the settlement of those outstandng political problems which proved so disturbing in 1921. It is of course dangerous to get into the region of prophecs—so many apparently well reasoned opinions as to market conditions have gone astray that it is better to refer to general tendencies than to venture on definite statements.

The indications are that with a return to better world wide conditions pulp and paper will again come into their own. No one wants to see a repetition of that runaway market which induced so much previous speculation, and which would again take commodities out of sight. A steady stabilized condition is what is desired, as being the best, in the long run, for all classes of the industry.

Considering the universal depression, the manner in which Canada came through 1921 was a tribute to her sound financial position and careful business management. The enormous liquidation of various commodities, the fall in prices, and the decline in purchasing power involved problems which have been, and are being, surmounted, and give confidence for a still further strengthening of Canada's domestic and foreign position in the world of commerce.

PULP.—Business in almost every grade is on the quiet side, but there are hopes that consumption will appreciably increase, and that prices will strengthen, especially in those lines where the margin is down to very small proportions.

FINE PAPERS.—To quote the words of one of the officials of a company making this class of papers, "Trade is improving steadily; I believe that the stocks of jobbers are low, and that there is ground for the belief that business will continue good."

BOOK PAPERS.—In this section orders are coming in well. There is no rush, but the demand is sufficiently strong to keep the mills busy. The only drawback is that orders are required to be immediately filled, for the most part.

BOARDS.—This market continues to be spotty; the turn of the New Year will probaby see a stronger demand.

ROOFING PAPERS.—At a prolonged meeting of manufacturers of patent roofing the entire trade position, including that of raw materials was discussed. The price of felts remains unchanged.

RAGS AND WASTE PAPERS.—The supply of rags is not above requirements, although there is a tendency for more rags to come in, owing to the needs of people, who failing regular employment, are willing to earn money by collecting rags. The demand for waste paper in Montreal is still in excess of the supply.

NEW YORK MARKETS.

New York, December 24—(Special Correspondence)

It is customary for activity in the paper industry to slow down during the final couple of weeks of the year, and the present situation is quite characteristic of this season. Demand for paper during the past few days has been narrow, buying has been almost solely to cover immediate needs, and the trade has been marked by a pronounced degree of quietness. Reports from manufacturing centres generally tell of mills closing down over the holiday period and to take inventory, and paper manufacturers seem more concerned at the moment with stock-taking and other matters attendant to the end of the year than in absorbing additional supplies of raw material, with the obvious result that the raw material markets also are experiencing dullness.

The paper market as a whole continues fairly healthy. The easing off of demand recently has failed to worry manufacturers or dealers, who readily appreciate that this condition invariably develops at this period of the year. There is a feeling of decided confidence regarding the outlook. Nearly everyone in the trade looks for good business soon after the turn of the year, and there are numerous signs that expectations on this score are going to be realized. Some kinds of paper have had a very satisfactory pre-holiday demand. Newsprint has been in active demand and the market for this grade of paper has strengthened its position immensely. Kraft wrapping paper has sold in largelvolume, and tissue papers have been in excellent call. Indications are that it is only a matter of a short time when demand for other kinds of paper will begin to expand very appreciably. Book paper, for example, should find a much broader market during the next few weeks. The publishing business is reviving, due to a steady growth in advertising, and the probabilities are in favor of magazine and other periodical publishers coming into the market for increased supplies of book paper shortly. The usual early-in-the-year improvement in demand for box boards doubtless will develop during the next month or so. Paper box manufacturers seldom if ever stock up with board to any extent, and they are likely carrying less board today than ordinarily, so that a much better movement of boards is in prospect soon after the holiday season. Fine papers also are due for considerable improvement. General business is on the mend, and as manufacturers and merchants become busier, they will use larger amounts of writing papers. The fact should not be lost sight of that the leading field for the consumption of fine papers is business concerns, and it is but logical to expect that business men the country over will not spare paper during the coming months in an effort to obtain business for themselves.

Statements by postal department authorities in Washington, as well as locally, that the Christmas mail has exceeded all records this year is an encouraging sign. This means that there has been a heavy consumption of fine papers recently, and that stocks will have to be replenished after the first of the new year.

consumption of newsprint has been comparatively heavy, and gives promise of continuing so during the remainder of the winter. There are other indications that consumption of various kinds of paper is on the rise, which, after all, is the basis of good business for the paper producer and dealer, and which should make everyone in the paper trade an optimist on the eve of a new year.

There have been no changes of importance in market conditions this week. Prices on the various kinds of paper hold at about previous levels and jobbers report having less difficulty in obtaining the prices quoted. Consumers are showing that they are willing to meet the figures asked if in need of paper, which proves that it is not price that holds up trading at present.

GROUND WOOD.—While current demand for ground wood is spotty and in the aggregate of light volume, volume, there is a firm tone to prices. Sales of prime spruce ground wood for spot shipment have been reported in some cases at as high as $46 a ton delivered consuming mill, which it must be admitted is an attractive price for ground wood. Another sale of note locally was a lot of foreign ground wood, held on the spot here, for which the importer obtained $36.50 a ton ex dock. This price is slightly above average quotations on foreignmechanica l pulp, between $33 and $35 being about the prevailing market ex dock at Atlantic ports, but the instance cited shows how high consumers will go when in need of pulp. Domestic prinders are quoting at anaverage of $32 per ton f.o.b. grinding plants, with prices figuring out from $40 upward delivered consuming points. A bullish feature about ground wood is that unsold stocks are limited, probably a good deal more so than ordinarily at this time of the year. This causes grinders to be more or less independent regarding prices and keeps them from pressing supplies onto the market.

CHEMICAL PULP.—The chemical wood pulp market lacks feature at the moment other than prices rule quite firm. Papermakers are coming into view as buyers when immediately in want of pulp, but otherwise they are doing little buying, and the market rules quiet. Domestic producers appear to be fairly well sold up, however, and importers seem to have liquidated the bulk of their holdings on this side of the Atlantic, with the result quotations are firm and no one is pressing consumers to buy.

Importers assert that there is small likelihood of prices on Swedish pulps going back to the low levels obtaining a short while ago. The higher rate of exchange in itself will prevent this, it is claimed, while manufacturers in Sweden are reported stronger in their views and to be insisting on higher prices. There have been sales of Scandinavian kraft pulp this week at 2.75 cents a pound ex dock New York and Baltimore, an dit is stated that this is about the bottom figure at which foreign kraft is now available. Domestic kraft is quotably steady at between 2.75 and 3 cents per pound at producing mills, with those producers making an extra strong No. 1 kraft freely receiving 3 cents for their pulp. Bleached sulphite is in steady demand and firm in price.

RAGS.—Paper manufacturers are showing very little buying interest in rags at present. This is not surprising when it is understood that most mills are occupied in taking inventory and therefore are more desirous of reducing stocks of raw material than in augmenting them, and dealers say that their offerings to consumers seldom result in sales. Occasional transactions are of course being accomplished, but these comprise about all of the business that is passing, and some grades are moving in such light amounts that no established prices exist.

Roofing stock is still the most actively sought class of rags, and this is not saying much becaue there is no concerted movement of any grade. Felt paper mills are absorbing some quantities of No. 1 satinets at about 90 cents a hundred pounds f.o.b. New York, and No. 2 satinets at 80 cents, and signs are not wanting that certain felt manufacturers are quietly laying in stocks of such rags against forward requirements. Old whites are in little demand, and there is practically no interest shown by buyers in thirds and blues. New cuttings are quiet, with dealers quotations ranging around the following levels: No. 1 white shirt cuttings, 10 cents per pound; fancy shirt cuttings, 6 cents; washables, 4 cents; unbleached muslins, 8.50 cents; white lawns, 8.25 cents, and light silesias, 6.25 cents.

PAPER STOCK.—Low grades of waste paper have been in exceedingly slow demand this week, and there has been no material improvement in the better qualities though the latter are steadier in tone and are moving in relatively larger volume than the former. Old folded newspapers are offered to board mills at 45 cents a hundred pounds f.o.b. New York, and are accorded scant attention by consumers, while No. 1 mixed paper at 35 cents a pound at shipping points for No. I hard white, and at around 3 cents for No. 1 soft white shavings. Old magazines are quoted at 1.20 to 1.25 cents per pound and are apparently held in rather light supply. Old kraft is selling at an average of 1.55 cents a pound New York, white news cuttings at 1.65 cents, overissue newspapers at 70 cents a hundred pounds, and No. 1 print manilas at 85 cents.

OLD ROPE AND BAGGING.—Old manila rope is the one firm item in the papermaking material trade. Dealers lay great stress on the short supply of this commodity, and report having no difficulty in obtaining 5 cents a pound or within an eighth of a cent per pound of this price for manila rope in No. 1 condition. Mixed strings also are moving fairly well at around 85 cents a hundred pounds at shipping points. Old bagging is dull, with only spotty sales recorded at between 90 cents and $1 a hundred pounds for No. 1 scrap bagging.

In a brief filed last Wednesday with the Senate Finance Committee, Henry W. Stokes of Philadelphia, chairman of the tariff committee of the American Pulp and Paper Association, stated that America has become the leading paper manufacturing country of the world and to maintain that place the industry must have protection against cheap foreign labor and depreciated foreign currency. The American paper making industry is now a billion dollar one with 818 paper and 322 pulp mills Mr. Stokes pointed out in presenting his brief. During the business depression of the past year, said Mr. Stokes, there was a considerable falling off of the amount of paper manufactured. Some grades are now back to 75 per cent of normal, but many are still below 50 per cent of normal production. Spokesmen for various branches of the industry, except newsprint, gave details as to conditions in their lines. Producers of paper wall board alone urged that their products be put on the free list.

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INQUIRIES SOLICITED:

NOTE ON BENTONITE.

Abstract of Report from Winnipeg Free Press, Saturday, Nov. 26th, 1921.

The United States Bureau of Mines has recently issued a report of investigations on the mineral "bentonite." This is a comparatively unknown mineral, and up to recent times has not found much use in commerce but according to the above report the outlook is most excellent that this material will find extensive use.

Use of Bentonite Expanding.

Until recently the uses for bentonite were few and relatively unimportant. These seem to have been principally in the manufacture of the medical dressing, antiphlogistine; in the manufacture of a packing and dressing for horses hoofs; as a retarder in the manufacture of gypsum wall plaster; as a filler in the manufacture of paper (at a mill in Denver) as a filler in soap; and as an adulterant in drugs and candies.

Within the last few years the unusual properties of bentonite have attracted considerable attention and systematic research has been undertaken to study this material and to develop the best methods for its utilization. The forest Products Laboratory at Madison, Wis., has made rather exhaustive tests on the use in papermaking of a high-grade variety of light yellow, colloidal. Wyoming bentonite, known as wilkinite. Their tests seem to show that the addition of small amounts of bentonite to the clay used as a paper filler greatly increases the percentage of filler retention in the finished product. Thus, in one test the retention with clay alone was 45 per cent; with 10 per cent bentonite and 80 per cent clay, 64 per cent; and with 100 per cent bentonite, 84 per cent. Some paper companies that have tried out this material claim the additional advantages of complete suspension in water and the production of a paper of superior "feel."

LIQUOR INTERESTS AND THE CITY PRESS

The liquor interests in Canada centre chiefly in the cities. The newspapers with largest circulation are in the cities.

Some of these papers do not favor the drink traffic, some do. To what extent, if any, the latter is due to the influence of the liquor interests, its advertising patronage, etc., is known to the papers themselves.

But the point to note is that when any of the great city papers oppose prohibition, it is well to remember that the reasons given may not be facts. Strong drink sometimes makes men "see things" even when they do not drink it. Concerning this, the "*Dearborn Independent*" says:

"If one confines his reading to the New York press, he is very likely to become imbued with the idea that prohibition has been an utter failure in America. These newspapers say that it is and will continue to be a failure.

"They admit complacently that they do not believe the laws regarding liquor will ever be enforced, and in their comments on the subject and the encouragement which they give the lawbreakers make it very evident that they hope this lawlessness will prove to be such a problem that the United States will surrender in disgust to the criminal interests.

"On the other hand, one may find in the smaller newspapers of the country the chapters of a far different story. From reading these it become evident that whereas all New York sees is the violation of the law. there are other parts of the United States which find that prohibition has brought many blessings."

No. P & P 143

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